

UK edition December 1994 £three ¥2100 $ten

EDGE

Sony ■ Sega ■ Nintendo ■ 3DO ■ PC ■ Amiga ■ Atari ■ SNK ■ Arcade ■ NEC ■ CD-i



Neo-Geo CD

The world's most powerful cartridge arcade system has been reinvented

(and now you can actually afford the games)

Issue fifteen **15**

Voted **Magazine of the year**



Industry awards

SNK's new CD-ROM machine is coming to the UK. For the first time, the Neo-Geo's superb arcade games will be within the reach of most players. Edge tests the first machine to hit these shores






EDGE



Knight in shining armour, saviour of the videogame?

As the trickle of CD-ROM titles turns into a flood, and software developers get a handle on the medium, the silver disk is at last proving its worth. But not necessarily because of its technical prowess, but because CDs are cheap.

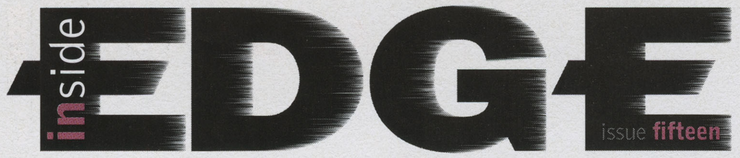
Cartridge-based games have spiralled in price over the last year, and Nintendo is upping the ante with titles like the 32-megabit (£1.80 per megabit) *Donkey Kong Country*. With floppy sales down and profits on anything but A-grade cart products often perilously close to non-existent, many publishers see CD-ROM as something of a saviour.

With this month's arrival of the Neo-Geo CD, complete with a catalogue of highly affordable arcade games, an important issue is finally being tackled by Japanese companies. If games of this quality can be available for less than the price of even C-grade SNES carts, the 16bit market will surely suffer even more desertion and contempt.

Similarly, news of the low cost of PlayStation games like Namco's *Ridge Racer* look set to change the structure of software pricing in the industry. If cutting-edge games for a potentially awesome new system cost up to £25 less than games for machines that are getting on for four to five years old, there's something seriously wrong.

Of course, the shiny 5" platter has delivered its own problems. CD-ROM titles are now pushing production costs into *seven* figures. But for the time being, the compact disc could well signal a revival in the fortunes of the interactive entertainment industry, and floppy disks and cartridges may find that there is no place in it for them.

The **future** is almost here...





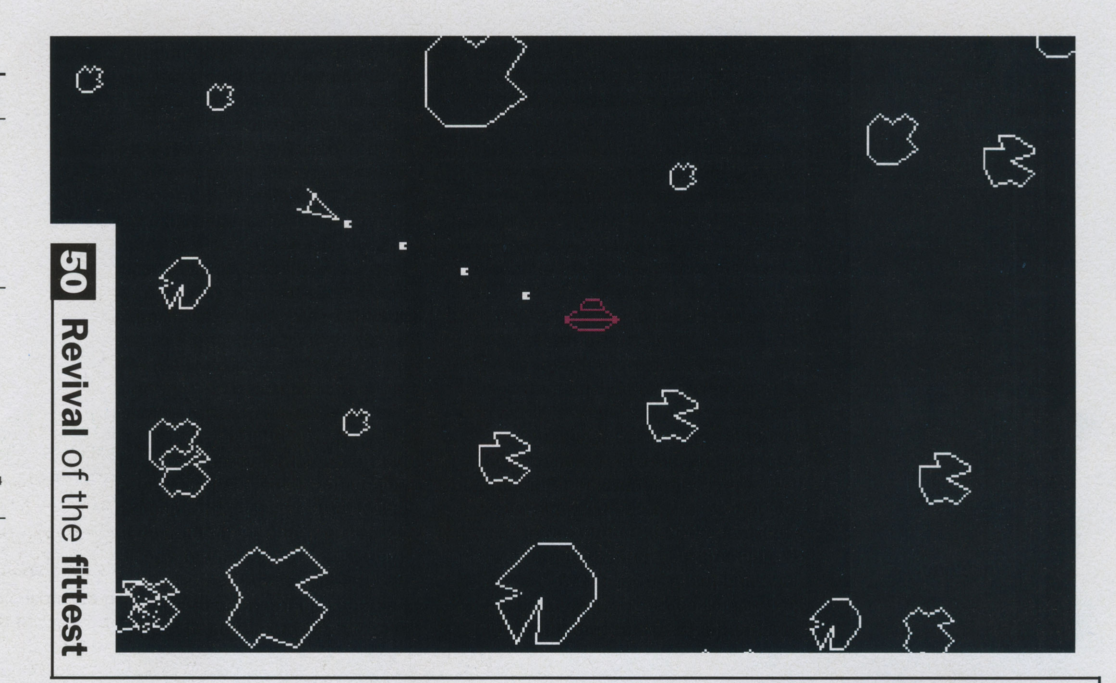


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Somerset TA11 7BR
Tel Customer services: 0225 822510
Customer order line: 0225 822511
Fax 0458 274378

Annual subscription rate **£36, post free**
Overseas distribution: Future Publishing 225 442244

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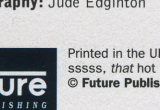
Cradley Print,
Warley, West Midlands
Edge is printed on Royal Press 90 gsm

Production of Edge

Hardware: Power Macintosh, Quadra, PowerBook, IIsi and Classic by Apple
Software: *XPress, Photoshop, Typestry, Freehand* and *Nisus*
Typography: (Adobe®)
ITC Franklin Gothic/**Heavy**
Bell Gothic Light/**Black**
Gill Sans/**Bold**
Fifth colour: Pantone® 8882c

Cover

Cover Image: SNK's new toploading Neo-Geo CD
Photography: Jude Edginton



insideview

6 News



Ace Driver (top left), *Killer Instinct* (left), *Neo-Geo CD* (right)

26 Prescreen





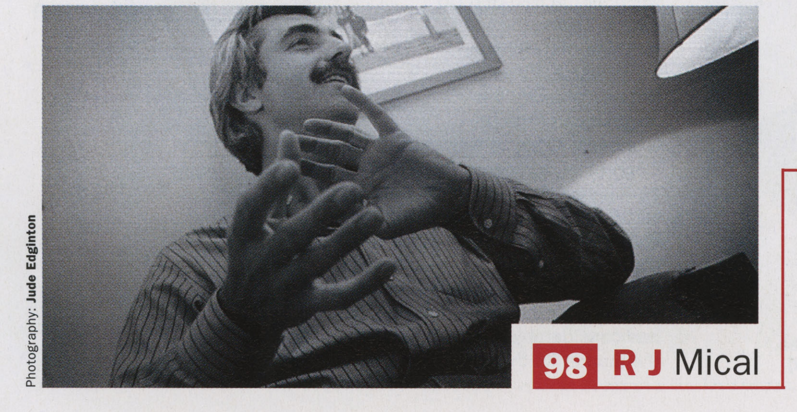
Return Fire (left) and *Motor Toon Grand Prix*

70 Testscreen

Ecstatica (left) and *Magic Carpet*







Photography: Jude Edginton

98 R J Mical



The latest **news** from the world of interactive entertainment

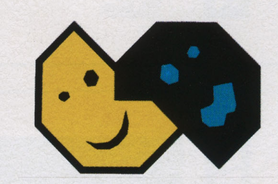
UK launch for Neo-Geo CD

Bearing a ready-made range of arcade-quality games, SNK's Neo-Geo CD arrives in the UK





The new unit is sturdy and attractively styled. The flip-top CD lid is raised by a simple press (above)

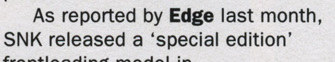


Four years after SNK first unleashed its potent Neo-Geo console on Japan, the Osaka-based company has launched a more determined attack on the domestic market with the introduction of the Neo-Geo CD – a repackaged, restyled and remarketed version of the arcade system that achieved limited penetration into the home.

As reported by **Edge** last month, SNK released a 'special edition' frontloading model in Japan on September 9. The voracious Japanese buying public consumed all 30,000 units on the first day of sale.

SNK's library of arcade games includes some truly memorable titles. The sheer power of some Neo-Geo software makes the machine well worth considering

From now on, though, a new, toploading model will bear the Neo-Geo CD badge. This is the machine that will soon be available officially in Britain, following the acquisition of the UK wholesale rights by New Generation, a recently formed company set up specifically to distribute Neo-Geo CD hardware and software. With SNK's new London office primarily concerned with the Neo-Geo arcade system, and no established distribution channels for the home machine, NG has considerable freedom to develop the market its own way. If all goes →



Neo-Geo: the story so far

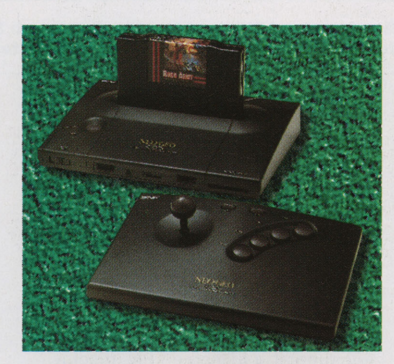
The Neo-Geo home system (above) went onsale in Japan in March 1990, packaged with a four-button joystick and a memory card. In a market where 8bit Famicom and PC Engine games were the norm, its arrival was met with general disbelief (and not just because of the price of the software). The technology was more advanced than almost anything available at the time, and delivered vivid, powerful games – SNK simultaneously launched a line of cart-driven Neo-Geo coin-ops, which are still thriving.

Given the age of the hardware, the Neo-Geo's spec is still impressive. Apart from the inclusion of an extra 430K VRAM, 64K SRAM and 56 megabits of DRAM, the CD machine is virtual identical. At its heart is a 16bit 68000 running at 12MHz, supported by a 4MHz Z80. It can handle up to 4,096 colours onscreen from a 16bit palette, with three simultaneous scrolling playfields and up to 380 hardware sprites (plus hardware scaling support). There is also some meaty sound from a 13-channel Yamaha 2610 chip.

High-memory, high-price cartridges and an entirely arcade-driven software library (no shortage of beat 'em ups) have limited the appeal of SNK's cartridge machine. Now, with the Neo-Geo CD, SNK is promising both a wider variety of in-house software (a *Zelda*-style RPG, *Krystalis*, has been held back especially for the format), and greater thirdparty development.

➔ according to plan, the Neo-Geo CD will start appearing in many independent shops – and possibly some of the larger multiples – from early November.

Edge has managed to obtain the only unit to have entered the UK – even before the machine goes onsale in Japan at the end of October. In technical terms, the toploading unit is identical to the frontloader. The only differences are superficial: a flip-top lid replaces the motorised CD tray, and the build quality and overall design have been improved. Like the previous model, the new machine's CD drive is a single-speed type, chosen for reasons of cost. The original cartridge Neo specs still apply, although the new machine now has a huge seven megabytes (56 megabits) of DRAM, 512K of VRAM and 64K of SRAM.



The limited-edition frontloading Neo-Geo CD sold out in Japan at launch

SNK will be pricing the new machine at the same level in Japan as the frontloader – ¥49,800 (£320), for the hardware only. According to Japanese sources, SNK makes no profit on the new hardware. Although the cost of the chipset has naturally decreased since its introduction, the continuing high cost of silicon on the international market means that the system's ample memory (the largest of any console by a huge margin) is a burden that couldn't be absorbed in its retail price.

SNK has had to make one major sacrifice to obtain the benefits of CD-ROM: speed. Neo-Geo CD games are handicapped by lengthy loading times – given that some of the recent games approach 200 megabits, those 56 megabits of internal DRAM don't go very far. Most of the games **Edge** tested took around 30 seconds to load initially, with subsequent loading taking place when required. Some early, lower-memory games take even longer, because the whole game is loaded into RAM at the outset, requiring a 40-50-second stream of data at 150K/sec (although no further data access is needed once the game is installed in memory). While that's fine for catching up on classics like *Magician Lord* and *Nam '75*, '100 megashock' and soon even '200 megashock' games will result in even longer delays. Time to make a cup of tea, put some toast on, and watch an episode of Brookside.

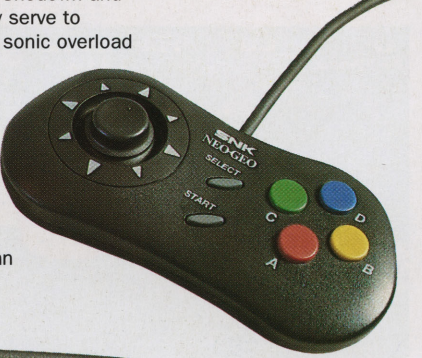
Of course, this problem is not unique to the Neo-Geo CD, and in many ways the delays endured while waiting for games like *Samurai Shodown* and *Fatal Fury 2* to load only serve to heighten the visual and sonic overload that follows. And many games (more than was first announced) will feature re-recorded CD soundtracks, which not only saves on RAM (and therefore reduces loading times) but, of course, means an



New Generation is marketing two Neo-Geo CD packages. The more expensive bundle includes two joypads (above) and three games

Who is it?

In 1975, this man made a decision with a friend that changed the face of computing. Longtime colleague of one of the richest men in the world, he assisted him in setting up one of the largest computing corporations ever





The new joypad (above) has a micro-switched directional control which works well. The rear of the machine features (from left to right) RGB SCART, S-Video, composite video and stereo jacks

Continued next page





Baseball Stars 2 (top) is an ordinary baseball game. SNK hasn't disguised the system's slow loading (above)



The pinnacle of SNK beat 'em ups, the superb *Samurai Shodown*. The Neo-Geo CD version (complete with even better music) costs just £45

it is...

Microsoft co-founder Paul Allen. Allen was instrumental in creating a version of BASIC that was used in the world's first microcomputer, the 8080 Altair. Microsoft was formed largely for the purpose of promoting this

Continued

improvement in sound quality – if there's one thing Neo-Geo CD games can do, it's produce excellent sound.

Two hardware packs are expected to be made available in the UK: one consists of the machine, a joypad and *Fatal Fury* for £399; the other comprises the machine plus two joypads and three games (*Fatal Fury*, *Super Sidekicks 2* and *Last Resort*) for £499. With SNK taking the traditional Japanese route of using the hardware as a loss leader, software sales are obviously crucial. UK games will start at £40, rising to £50 for newer titles, which alone makes the system an attractive proposition, given that many SNES and Mega Drive games are now weighing in at a hefty £60-70.

New Generation is well acquainted with the intricacies of the grey import market, so it's no surprise that the company will be handling both NTSC and PAL versions of the Neo-Geo CD. The NTSC machine can be played on most TVs with a SCART (21-pin) connector, which gives a clear, fullscreen picture. Happily, most titles will support a fullscreen PAL display, with only some of the older games running in letterbox format.

SNK is in the enviable position of having a machine that can immediately call upon a back-catalogue of impressive software. Non-beat 'em up fans may find its line-up fairly unappealing – 12 of the 25 initial UK releases are of the brawling variety – but SNK's library of arcade games does include some truly memorable titles. While the loading times can be offputting, the sheer power of some Neo-Geo CD software makes the machine well worth considering. Anyone in doubt should check out *Samurai Shodown* after playing *SFII* or *MKII* on the SNES. It's like lunching at the Savoy after scoffing a Pot Noodle.

New Generation can be contacted on 061-652 3143 (trade enquiries only).



There are few shoot 'em ups on the Neo-Geo, but the quality of *R-Type* 'tribute' *Last Resort* makes up for it. The moody music is outstanding

Size matters

The first Neo-Geo carts weighed in at a modest 46 megabits, while recent titles like *Art Of Fighting 2* (178Mbits), and newies like *The King Of Fighters '94* (196Mbits) and *Samurai Shodown 2* (202Mbits) are rapidly approaching the system's 'max 330 mega' limit. Presumably, the '300 megashock' that will be emblazoned on future Neo carts is also something that potential buyers will be suffering from...



Older titles start at £40, while *Samurai Shodown* (left) costs just £45 and *Super Sidekicks 2* is £50

Release dates

Early November
- *Nam '75*
- *Alpha Mission II*
- *Top Player's Golf*
- *Puzzled*
- *The Super Spy*
- *Burning Fight*
- *King Of The Monsters 2*
- *Art Of Fighting*
- *Fatal Fury 2*
- *Last Resort*
- *Baseball Stars 2*
- *Football Frenzy*
- *Samurai Shodown*
- *Super Sidekicks 2*

Late November
- *Magician Lord*
- *King Of The Fighters '94*
- *Top Hunter*
- *Aero Fighters 2*
- *World Heroes 2*
- *Thrash Rally*
- *Blue's Journey*
- *Ninja Commando*

December
- *Art Of Fighting 2*
- *Samurai Shodown 2*

January 1994
- *Aggressors Of Dark Combat*

VR32: a clearer picture emerges

Nintendo's mythical 32bit VR system is scheduled for worldwide shipout in April next year

Since its announcement in April, Nintendo's 32bit VR32 system has been the subject of much speculation, conjecture and general misunderstanding. In November, the company will dispel all preconceptions when it unveils the hardware at the Shoshinkai show in Tokyo on November 15, a full six months before it is expected to go onsale.

Pin-sharp details are still elusive, but it is now believed that the VR32 will be a portable, battery-operated unit which accepts cartridges and is attached by a lead to a set of goggles. The display will be based on new projection technology developed by an American company; it's possible that it consists of a monochrome display (visions of a VR Game Boy spring to mind) which can be projected up to three feet in front of the player as a stereographic image.



The Harumi International Trade Centre is where the VR32 will make its debut

Although the identity of the US company has not been disclosed, some pundits believe that Nintendo has tied the knot with an unknown startup possessing proprietary technology. However, **Edge** has learned of two established VR players that could be involved.

The first is Virtual IO, manufacturer of fully engineered HMDs that use 'non-immersive' technology – that is, it's possible to see around and through the HMD, which reduces the dangers of tripping over the dog, falling in the bath, etc. The only fly in the ointment is that a possible conflict of interest exists: Virtual IO is developing an HMD for TCI's Sega Channel.

Deep in its Kyoto HQ, Nintendo is working on what could be its next big success

The second company, a Redmond-based (think about it) outfit called RPI, is known to hold some important VR patents. The technology has never been seen and the company is known to have been involved in negotiations with a major manufacturer.

Suggestions for the CPU have included 3D Labs' GLINT chip (see page 16) and NEC's V810 or V820 processor (more likely).

Nintendo had claimed that, as well as the VR32, Shoshinkai would be the venue for the unveiling of the Ultra 64. Now **Edge** has learned that only graphic demos will be shown, including glimpses of *Mario* and *Zelda*, Ultra-style. Still worth a trip. **E**





Fortnightly Japanese magazine 'The Super Famicom' recently printed this artist's impression of the VR32. It's a reliable indication of what Nintendo has in mind



i wish...



Mike Singleton

"In Berlin last night the Gamegiant was shown to the world's press for the first time. It truly is an awesome machine. At the heart of it is the OPC42, an optical processing cube which gives the Gamegiant massive parallel computing power – the machine can raytrace up to 200 million pixels per second in true 24bit colour. The Gamegiant unit itself is no bigger than a cigarette packet and can fit snugly in your shirt pocket. The Gamegiant's 3DShades™ give an intoxicating million-pixel resolution per eye and the Sonic Headband creates a depth of sound that rockets you into another world. Both joygloves and voice recognition are standard features of the machine, as is a satellite interface that links you straight into the global network.

With virtually every major manufacturer committed to supporting the Gamegiant as the world's standard games machine for at least the next five years, and with such powerful, all-singing, all-dancing hardware a reality, will we now see the games developers stop spending their time enthusing over clever new 'Wowee! Gosh!' technical advances and concentrate on the game itself? I certainly hope so."

Mike Singleton started his programming career with *Space Ace* on the Commodore Pet. He is best known for the long-running *Lords Of Midnight* series on the PC.

Coin-ops stay one step ahead

Coin-op companies flex their muscles at this year's JAMMA and AMOA shows

The PlayStation and Saturn represent a significant convergence between the performance of home and arcade silicon. But the arcade industry isn't ready to roll over and die just yet. The Japanese Amusement Machine Show provided an opportunity for coin-op hardware to reaffirm its technological superiority over the new consoles.

Sponsored by the Japanese Amusement Machine Manufacturers' Association (JAMMA) and held at Tokyo's Makuhari Messe venue, the AMS rekindled a few old rivalries between the major arcade players and confirmed the increasing lead that Sega and Namco have over the pack.

Sega's impressive catalogue (matching its impressively large stand) was headed by a 75%-complete *Virtua Fighter 2*. A stunning texture-mapped sequel to the Japanese hit, the game is expected to arrive in Far Eastern arcades before the turn of the year.

An equally impressive *Virtua Cop* (Model 2) was also shown, although it was described disparagingly by some observers as '*Lethal Enforcers* with polygons'. Playing a trigger-happy policeman with an arsenal of futuristic weapons, your mission is to rid the streets of criminals. A simplistic task but, as it turns out, a highly enjoyable one, especially as all the characters react differently according to the situation. The sight of a shotgun blowing your hapless victim across the screen was particularly popular. And those polygons are unbelievable.

Namco, the sole Japanese manufacturer to record an increase in profits last year (up 25%), had its new Formula 1 game, the System 22-based *Ace Driver*, lined up on the starting grid. Featuring two views and excellent eightplayer action, the game was another example of Namco stealing Sega's thunder, with its refined →



The Amusement Machine Show is Japan's premier coin-op event. Sega, Namco, Konami, and SNK, were some of the companies exhibiting



The obscenely large *Virtua Fighter 2* display (above) was Sega's pride and joy...



... and with texture-mapped polygons like this, it's not hard to see why

© Sega Of Japan

Atari windfall

Atari has found itself in a significantly improved financial position after emerging triumphant from four years of legal wrangling with Sega over patent infringements. The out-of-court deal resulted in Sega paying Atari $40 million cash upfront in exchange for an 8% stake in the firm, plus $7 million a year until the end of the century.

Also, (at Atari's demand), the two firms are to engage in cross-licensing, making it possible that Sega games will appear on the Jaguar and vice versa.

Last year, Sega's revenues were $3.6 billion. Atari's were $0.028 billion.

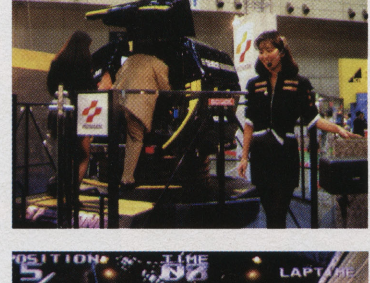
➔ System 22 hardware outperforming the current king of the driving games, *Daytona USA*.

Namco's other big showstopper was *Tekken* (shots next month). Based on PlayStation coin-op hardware, this spectacular texture-mapped fighting game was extremely slick, despite being only 40% complete. It lacked some of the visual punch of *Virtua Fighter 2*, and this early version was far too easy, but as a taster for future Namco/Sony collaborations it boded very well indeed. *Tekken* could easily dent Sega's plans if Namco manages to release the game on schedule (in other words, before *Virtua Fighter 2*).

Further evidence of the growing crossover between coin-ops and consoles was provided by Sega's long-awaited ST-V board – development name Titan. Designed as a streamlined version of Saturn, Titan has been optimised for use in the arcade: the twin 32bit Hitachi processors remain but the board now boasts more memory, a faster serial I/O, a custom Yamaha soundboard (different to the one found in the Saturn), and increased speed.

ST-V's main selling point will be its easy access to a wide range of home Saturn software on both cartridge and CD-ROM. The first ST-V titles to see the light of day are *Golden Axe: The Duel* and *Title Fight 2*. *Golden Axe*, now 50% finished, is a one-on-one beat 'em up with large, colourful characters and a wide range of special moves – although it has little of the charm of the original *Golden Axe* game. *Title Fight 2*, yet another boxing game, looks highly polished even though it is still at an early stage of development. Sega is hoping that the ease of cross-platform conversion promised by such games will encourage developers to port titles between arcade and console as standard. Development work has already begun on ten carts designed to prove that the theory works in practice.

Sega and Namco's pre-eminent position in



© Konami



Konami's $100,000 *Speed King* uses a reactive cockpit (top) and incredible realtime polygons (above and right)

What is it?

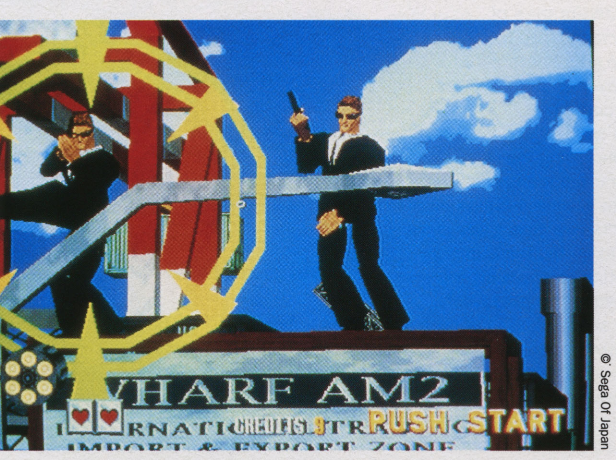
It cost seven and a half million pounds and is now fully operational. A major development for a Japanese videogames company, it is the place where all its European in-house development for the Saturn and 32X is being handled





© Namco

Namco's new F1 sim, *Ace Driver*, set the hearts of racing enthusiasts aflutter





© Sega Of Japan

Although essentially a *Lethal Enforcers* clone, AM2's *Virtua Cop* sports fantastic Model 2 visuals which put it way ahead of the pack

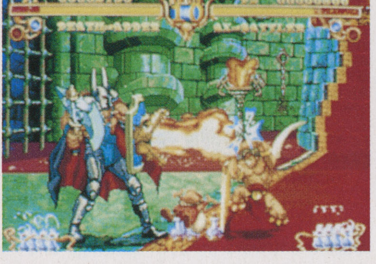
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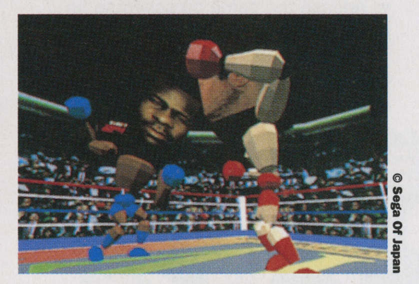




it is...

Sega's new European HQ in Gunnersbury Avenue, Chiswick, London. It is the focal point of Sega's European operation as UK thirdparty developers play an increasingly important role in its next-gen development





Sega's ST-V board (originally called Titan) was unveiled at the JAMMA show with a 50% version of *Golden Axe: The Duel* (above left) and *Title Fight 2* (above right). SNK's *Shin Samurai Spirits* (top left) and Taito's *Darius Gaiden* (top right) were popular sequels

Continued

Head start for Ultra 64?

Nintendo is apparently so concerned about the arrival of the Saturn and PlayStation in the US next year (spring and autumn respectively) that it is considering shifting the launch of its Ultra 64 home system forward by several months to mid-'95.

Edge has also discovered that the only developers with kits (Rare, Iguana and DMA) have been shipped Onyxes while the U64 chipset is being completed.

Nintendo is telling its developers that the finished Ultra 64 will deliver the same level of performance as an Onyx (realtime raytracing of 16bit colour polygons at over 30fps, etc).

In the meantime, Nintendo has another in-cart chip for the SNES on the way: a 32bit processor (possibly NEC's V810) for handling fast 3D...

the arcade market was threatened this time by Konami. The Kobe-based company previewed a highly ambitious $100,000 simulator ride called *Speed King*. **Edge** had the opportunity to test it out, and felt slightly the worse for wear after the experience.

Taito's *Real Punch* found a novel way to add a little spice to the classic 'punch the ball' game. Before each punch, your face is photographed and digitised. It's then subjected to warping effects based on the strength of your hit; depending on how well you perform, you can end up with anything from a thick lip to full facial mutilation. Taito could have a major hit on their hands if they release it with libraries of well-known politicians' faces..

Darius Gaiden was another Taito product on display. The third game in *Darius* series, it continues the familiar theme but offers several enhancements, including more shields, extra weapons and hidden areas. The playability of Taito games remains high, but if new products like *Space Invaders DX* are anything to go by, the company is clearly attempting to stave off the future by reanimating the past.

Virtual reality seems to be taking a tortuous route into the arcades, with only two VR projects present at JAMMA. *TecWar*, a joint Sega/Virtuality effort, was characterised by limited gameplay and unexciting backgrounds. Better was Taito's *Zone Hunter* (**Edge** 7), a 3D blaster (also produced with Virtuality) with some nice texture mapping.

Clashing with

the final day of JAMMA was the US Amusement And Music Operators Association (AMOA) show, which took place several thousand miles away in San Antonio, Texas. The result of this awkward piece of scheduling was that both shows competing for the industry's favours suffered noticeable attendance and credibility downturns.

AMOA's trump card was a little company called Nintendo. The prospect →

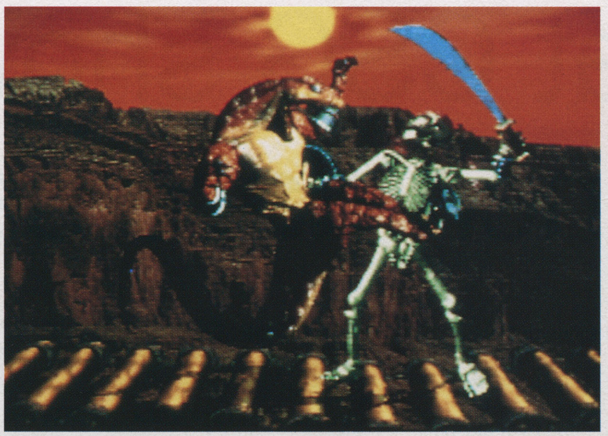


Photographs courtesy of **AB Europe magazine**

***Cruis'n USA* is highly playable but the cabinet (above) is about as cool as Budgie the helicopter**

Data stream

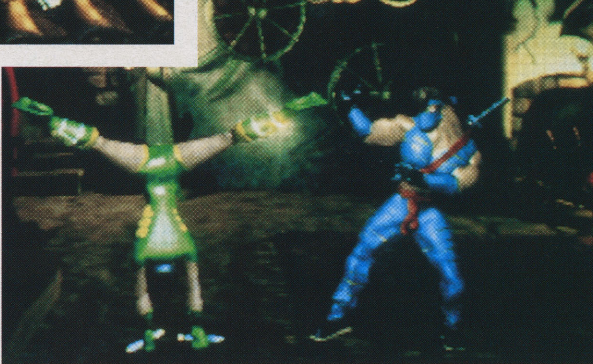
Reduction in Nintendo's net income between fiscal years 1993 and 1994: **41%**
Drop in Nintendo's share price during fiscal year 1994: **32%**
Number of cartridges sold by Nintendo in 1992: **170 million**
Number of *Mortal Kombat* cartridges in first shipment: **250,000**
Proportion of weekly cartridge sales accounted for in one day by *Mortal Kombat*: **25%**
Proportion of videogame sales accounted for by cartridges in September 1994: **64%**
Number of add-on modules available for *AutoCAD*: **4,000**
Maximum RAM of Silicon Graphics' Challenge XL Enterprise Server: **16 gigabytes**
Maximum disk capacity of Silicon Graphics' Challenge XL Enterprise Server: **3 terabytes**
Maximum recommended length of a parallel interface cable: **15 feet**
Pages of uncompressed A4 text that can be fitted on a CD-ROM: **200,000**
Proportion of Namco staff engaged in research: **25%**
Fee demanded by Don Johnson for a 22-episode TV series: **$2.2 million**
Profits recorded by BSkyB last year: **£170 million**
Increase on previous year: **177%**
BSkyB's outstanding debts: **£1.75 billion**
Number of conversations carried simultaneously by latest fibre optic cables: **500,000**
Number of video channels carried simultaneously by latest fibre optic cables: **5,000**
Diameter of first 'floppy' disk: 8¼"







Rare's *Killer Instinct* was AMOA's main attraction. It's now complete, with tight play mechanics and utterly beautiful graphics



Meltdown feels Glacius' chill (top right), Jago watches B Orchid's unusual move (above) and Riptor eats Spinal (top left)





➔ of Ultra 64 coin-op hardware on show was enough of a temptation to drag exhausted Tokyo delegates halfway round the globe. **Edge** joined the exodus to find out whether the effort was justified.

Killer Instinct effortlessly fought its way to the front of the queue of attention seekers, proving irresistible to the hordes of *Street Fighter II* devotees. With its 11 fully rendered and texture-mapped characters, Rare's twoplayer fighter is solid and supremely playable. Combos seem to be the order of the day. Forget *Mortal Kombat II*'s five-hitters; **Edge** counted 23 in a particularly devastating attack from Spinal. However, American concerns about the finished version's commercial viability (the blood and guts are decidedly incompatible with the wave of political correctness sweeping the USA) still linger.

Namco's *Ace Driver* was a big hit in San Antonio (as was *Tekken*, shown off behind closed doors under the name *Rave War*). But, according to opinion on the floor (a straw poll of assorted journalists conducted by **Edge**), the king of the driving sims was Nintendo's other Ultra 64 coin-op, *Cruis'n USA*.

Although it lacks the power of Namco's System 22 (the frame rate is lower and the polygon graphics have a traditional look to them), the strength of the Nintendo/Williams open-road cruiser is its gameplay. *Cruis'n*'s choice of four cars (and a further four secret vehicles, including a police car and schoolbus, if you know the cheat), 14 cities to race through and a total of 2,650 miles to burn up made the closed loops of *Daytona USA*, *Ridge Racer* and even *Ace Driver* seem restrictive in comparison. When you consider that all these games are destined for home consoles and therefore need to offer many hours' play, the Ultra 64-bound game appears to have the edge.

Cruis'n's driving 'feel' is spot-on and the crash mechanics are superb: skilled drivers can keep their heads and weave through a multi-vehicle pile up while all around lose their no-claims bonuses. Those yearning for a latterday *Out Run* may not have to wait much longer. The only flaw is the cabinet itself, which is evidently styled to appeal to fans of Noddy's Day Out.

Sega's presence at AMOA was designed to complement its JAMMA display – and perhaps also to prevent Nintendo running away with all the headlines. It was also one of the few companies commended for taking even the slightest chance on anything new: *Wing War* and *Desert Tank* were both well received, even if they may lack the legs to make it all the way to the top.

The pessimism that has dogged the arcade industry during the last 18 months appears to be waning. Manufacturers are girding their loins for a fight, and marketing men are enjoying themselves promising consumers that the conversions will be, to use an emerging industry phase, 'home perfect.' E

Saturn at CSG show, launch **date** set

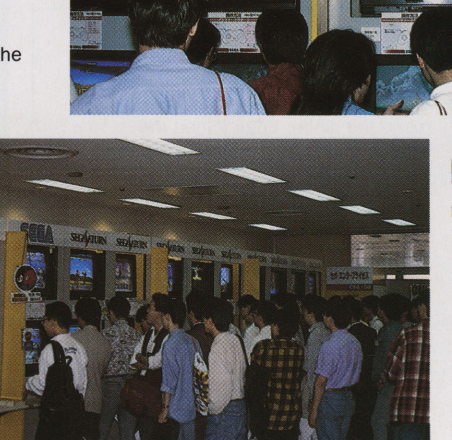
The CSG show was the perfect opportunity for Sega to reveal its pre-launch Saturn software line-up

Putting its lacklustre March show well behind it, the Consumer Soft Group (CSG) moved to a much larger venue in Ikebukuro, Tokyo for its latest biannual exhibition. Usually well supported by consumers and exhibitors alike, the event saw 58 companies displaying their latest wares.

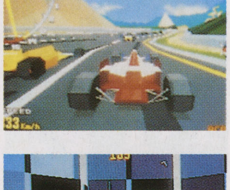
Sega's presence at the show coincided with its announcement of the Saturn launch date. In a move designed to gazump Sony (which shifted the PlayStation launch forward to November 30 to maximise its sales) Sega is now launching the Saturn on November 22. Licensed machines, notably the V-Saturn (bearing the name of one of Sega's development partners, JVC) will appear at the same time. The price was still undecided at the time **Edge** went to press, although it is thought that it will be about 10% less than the ¥49,800 (£320) previously announced

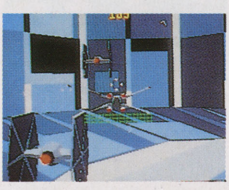
Protected by its usual mob of camera-phobic officials, Sega's booth featured a range of Saturn and 32X games. In the absence of *Daytona USA*, *Panzer Dragoon* was the hottest attraction. The game looked almost complete, with all three views (front, side and rear) now implemented and an increased level of detail in the backgrounds. The remaining time before release will be taken up with designing more levels. *Virtua Fighter* (see **Edge** 14) was playable, but still a long way from the arcade version. *Victory Goal* and *Gale Racer* were also shown, but only on a video wall.

Despite Sega's decision to release the 32X in Japan after all, the selection of 32X titles previewed at CSG



Sega's Saturn stand (above) included playable versions of *Virtua Fighter*, *Clockwork Knight* and *Panzer Dragoon*. The 32X was at CSG, too (left)







Interest in Sega's 32X games was high, although few delegates hogged joypads for long. *VR Deluxe* and *Star Wars Arcade* were most popular (top)



NEC's PC-FX was up and running. Some software looked odd, some impressive

32X price set

Sega has announced a UK price for its 32X add-on. The hardware will retail at £169 (no game included) and ship to the UK in late November. Five '£10 off' vouchers will be bundled with the machine, providing discounts on new games.

Unfortunately, they won't all be needed – only *Virtua Racing Deluxe*, *Star Wars Arcade*, *Motor Cross Championship* and *Doom* will initially be available, priced at £50 each. This should (hopefully) rise to 40 by Easter '95.

Incidentally, Sega is still tweaking the first batch of 32X games – expect some coverage in Edge next month.

Saturn gear

Accessories for the Saturn were recently shown at an electronics show in Japan which took place a week after CSG. Around the time of launch, Sega will release a multitap adaptor for up to sevenplayer games (connecting two machines enables up to 12 to play), as well as a mouse, a steering column (in time for *Daytona USA*, hopefully) and a RAM cart which boosts the system's SRAM back-up capacity 16-fold.



JVC's version of the Saturn, the V-Saturn, will be available at the same time as Sega's. The only changes are cosmetic, and the same price (whatever it may be) will apply

What is it?

They are infinitely complex yet completely definable. They can generate gigabytes of pictorial or sound data from five of six parameters. They have the potential to make today's data compression efforts look primitive

Name your price

With only a few weeks remaining before the launch of the Saturn and PlayStation in Japan, speculation about their price is rife. Mirroring Sega's concern about Sony (see story opposite), an SCE official commented: 'We feel anxious about other companies' actions. We're aware that we can't keep silent forever, so we'll announce the price in good time.'

Analysts in Japan have assembled possible price brackets for each of the coming machines. One thing is clear: it looks like being a consumer's market.

Saturn (onsale Nov 22)
Price: ¥42,800 to ¥47,800

PC-FX (onsale mid-Nov)
Price: ¥47,800

PlayStation (onsale Nov 30)
Price: ¥29,800 to ¥42,800

Ultra 64 (onsale Sept '95)
Price: ¥25,000 to ¥29,000

3DO (available now)
Price: ¥40,000 (based on recent US reduction)

¥47,800 = £305, ¥42,800 = £275
¥40,000 = £260, ¥29,800 = £190
¥25,000 = £160

(*Metal Head*, *Star Wars Arcade* and *Space Harrier*) failed to generate much enthusiasm. The general attitude seemed to be, 'Why bother with this kit when I can have a Saturn?'

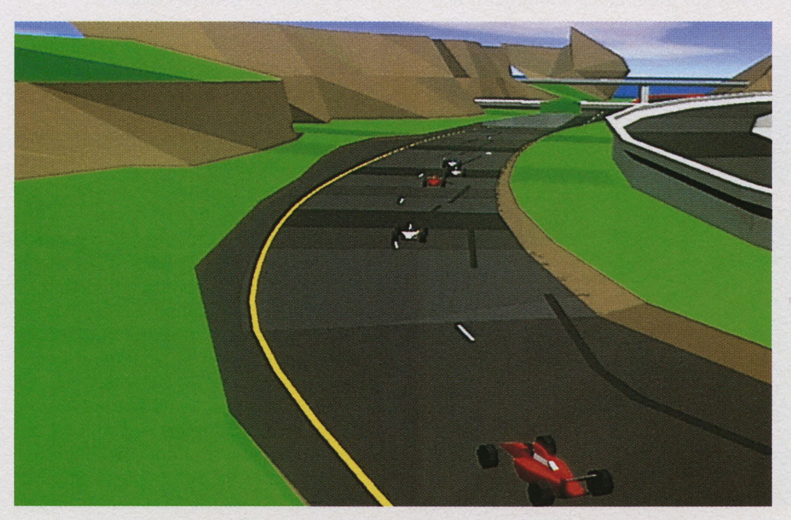
Time Warner Interactive (present at CSG for the first time) is spreading its wings, with plans to develop for both the PlayStation and Saturn. Its first project due for release is *Tama* (see **Edge** 14). The Saturn version is only a month away but the PlayStation will have to wait a little longer. TWI is also developing *Virtua Racing* for the Saturn; irrespective of the quality of the *Daytona USA* conversion, it looks a certain money-spinner.

Capcom's barren patch appears to be continuing. Despite an announcement that its current arcade success, *Darkstalkers* (aka *Vampire*), is on the way to the PlayStation, all it had were SFC games: *Rockman X2* and *Captain Commando and Mickey and Minnie's Magical Adventure 2* (again).

NEC, a company whose games division is aimed almost exclusively at the Japanese market, also showed up. Playable demos on finished PC-FX units included the same selection of (it has to be said, very Japanese) software seen at the Tokyo Toy Show, although the majority are nearing completion.

Also circulating on the NEC stand were rumours of the company's future plans: several sources claim that NEC is already working on the successor to the upcoming PC-FX.

Finally, the 'ambitious shoot 'em up' in development for the PC-FX (**Edge** 11) is to be a 3D remake of *Space Invaders*. Very ambitious.



One surprise at CSG was the announcement that Time Warner Interactive has snapped up the rights to develop *Virtua Racing* for the Saturn (early screenshot, above)

Nakayama speaks out

Sega's president, Hayao Nakayama, has publicly voiced his fears about the impending console battle.

'There will be chaos,' he recently told the Japanese business press. 'Sometimes we will win and sometimes others will win. For certain we will survive. Whether as number one or number two, I don't know.

He continued: 'Sony is a much stronger company than another company I can't name [answers on a postcard]. Sony has much more experience in the consumer market.'

UK chip delivers 3D power

Edge visits a home-grown company with designs on the global PC graphics market

it is...

A fractal. Fractals allow complex patterns to be generated from simple equations. Their potential is starting to be tapped in the field of data compression – ratios of 200:1 are thought to be possible

British-based hardware designer 3Dlabs has developed a new chip that could revolutionise PC graphics performance.

Called GLINT, the 64bit custom graphics accelerator is designed to take on all the rendering-intensive 3D work usually handled by the PC's central processor, leaving it free to perform other tasks. It can produce 300,000 Gouraud-shaded and depth-buffered polygons a second and also offers texture mapping, alpha blending, anti-aliasing and fog effects – capabilities which easily put it on a par with the custom graphics hardware found in the next-generation consoles.



The GLINT story begins in 1983. 'We couldn't even afford a garage,' recalls **Osman Kent**, president of 3Dlabs. 'My partner had a house in Kilburn and I had one in Kingston-upon-Thames. His house was called the headquarters, while mine was the technical site. We had customers calling at these places, some really prestigious customers, and some of them didn't even realise that they were in the right place.'



The beast itself: GLINT packs 304 pins spaced at intervals of 0.5mm

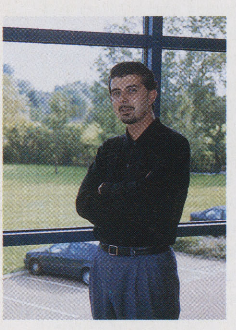
Continued

Kent's company has undergone numerous changes since those humble beginnings. In 1985, 20% of it was sold to Phicom, providing a cash injection that enabled work to start on a project called the GJP, which was intended, in Kent's modest phrase, to be 'the world's fastest graphics engine'.

A year later Kent showed the new chip in America. 'No-one was expecting us,' he says. 'We came out of nowhere, this tiny company from England with world-leading technology.' The pedigree of the GJP was immediately recognised and led to Crosfield Electronics investing in the firm in 1986.

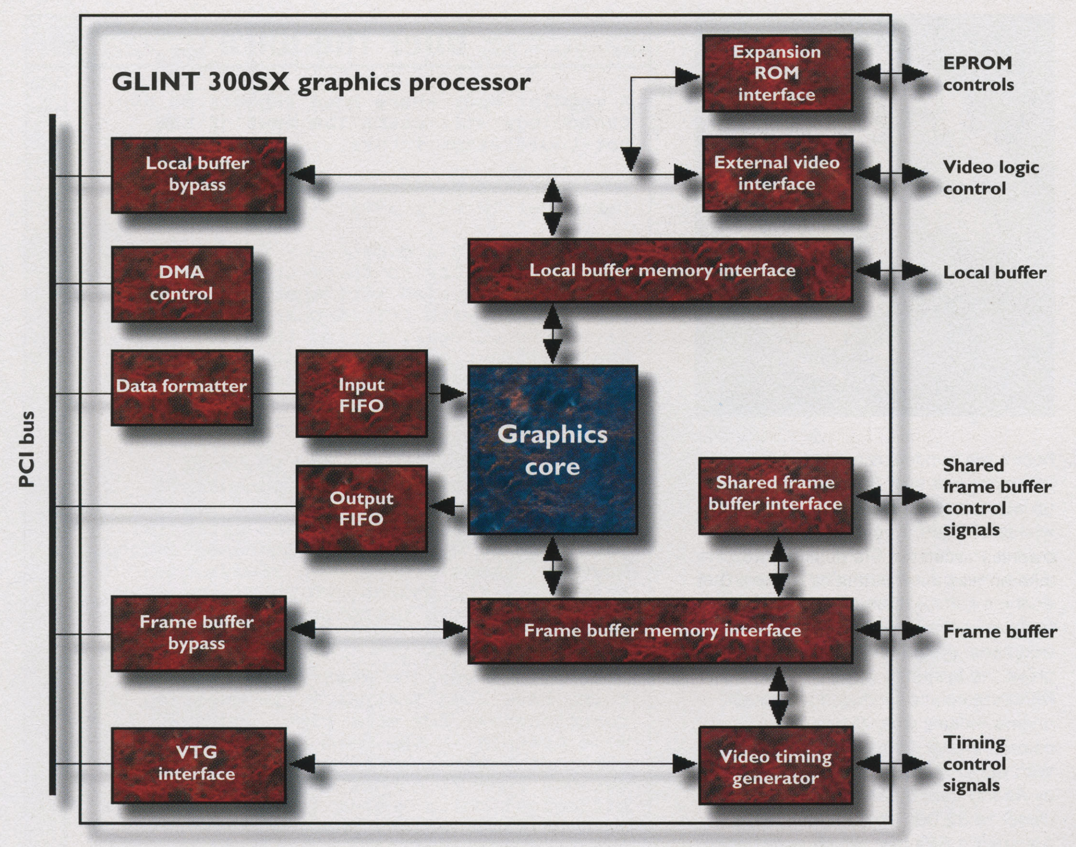
But the biggest boost to the company fortunes came in 1988 when it was bought for $12 million by DuPont, one of the world's ten largest corporations. Now named DuPont Pixel, it received research investment of $20 million over the next six years and was granted several key 3D patents.

The GLINT project was started in 1993 when the company was still under the aegis of DuPont. 'We began development of the 3D graphics chip that would use all the 3D knowhow we had accumulated so far,' says Kent. 'It →



Osman Kent's policy of co-operation rather than confrontation has served him well

A 16,000 polygon demonstration of RenderMorphics' *Reality Lab*, which automatically detects the presence of the GLINT chip



The GLINT chip's 64bit architecture (above). Z-buffering is achieved using the local buffer's fast VRAM

PC link for PlayStation

Rendermorphics' *Reality Lab* graphics software is an important element in the GLINT story (see overleaf). Edge has learned that not only is *Reality Lab* currently licensed to major players in the games community, but RenderMorphics is also working closely with Sony, reputedly providing it with a graphics library for the PlayStation which will streamline games development. Edge has also discovered that Sony (ie Psygnosis) is developing an API that will allow cross development between the PC and the PlayStation. The result: PlayStation games will be appearing on the PC, and vice-versa.

→ was a real mega device that even SGI wouldn't have attempted to do. And it became apparent to us that there were markets outside the high-end systems we were concentrating on. So my partner and I decided to go it alone.' Thus was 3Dlabs born, a company with the resources to take on the world.

The success of 3Dlabs is due to a combination of technological expertise and business acumen. Although many firms have produced powerful graphics accelerators, most have fallen by the wayside due to the problem of persuading developers to support a 'non-standard' product. A significant step towards overcoming this obstacle was made in 1990 when Kent entered talks with SGI to license its *OpenGL* system. At the time, Kent was focusing on Sun SPARC workstations and SGI were wary of licensing their 3D graphics libraries. Kent managed to overcome SGI's reservations and secure one of the first licences, with the result that GLINT became the first single-chip device to support *OpenGL*.

This was a crucial development given that *OpenGL* is used as an API (application programming interface) by the industry powerhouse, Microsoft. It is supported by Windows *NT* products and will also have full functionality in *Chicago*.

Both Motorola and Intel acknowledge GLINT as a significant step towards bringing fast 3D rendering to the home market. Many graphics card manufacturers, like SPEA, are also excited by it. However, Kent denies rumours that Nintendo is planning to incorporate GLINT technology in its upcoming VR32 system.

More concrete is the involvement of Singaporean soundcard manufacturer Creative Technology, which has taken a minority stake in 3Dlabs with the aim of creating a combined graphics and soundcard. For Kent, this link has a particular relevance: 'Singapore is renowned as the world's sound island. In Britain, we have a huge amount of untapped graphics talent. There's no reason why Britain shouldn't be known as the world's graphics island. We have the best skills. We just don't shout about it.'

In another move illustrating the multidisciplinary collaboration that Kent



Both these demos (above) are fully depth buffered and took just five minutes to create using *Reality Lab*

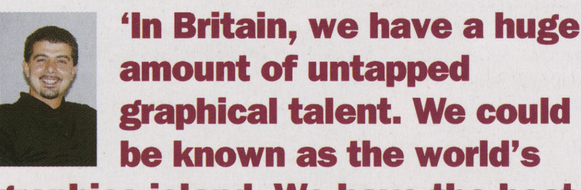
Continued next page



When requested to by an API like *Reality Lab* (above), even the home version of GLINT will map 24bit textures onto realtime demos (right)

Continued

hopes will become standard in the computer industry, 3Dlabs has teamed up with London-based RenderMorphics, whose own API, *Reality Lab*, features built-in support for GLINT. *Reality Lab* is a *Windows*-based authoring system that enables games to be created in a fraction of the time consumed by traditional programming methods – to prove the system's power, RenderMorphics produced a true 3D engine running with 256 textured colours and at 15fps in less than a day. With GLINT installed (and auto-detected by *Reality Lab*) these figures would be closer to 32,000 colours and 50fps. Argonaut's *BRender*, which is designed



'In Britain, we have a huge amount of untapped graphical talent. We could be known as the world's graphics island. We have the best skills. We just don't shout about it'

specifically for games development and specialises in fast texture mapping, also offers GLINT support.

Of course, developing a world-class product and selling it to the world are two different things. 3Dlabs proposes to price the basic 300SX at $150 each for purchases of 10,000 units. Another version, the 300TX, with far superior texture-mapping ability, is aimed specifically at arcade developers, who, says Kent, have shown 'considerable interest'. By making it unnecessary for developers to adopt new standards, GLINT has already leaped the first hurdle in the race for acceptance. The graphics chip standard could eventually be dominated by a single firm to the same extent that Intel dominates the home CPU market.



Over the wire

A regular spot where Edge reports on how technology will shape the news of the not-too-distant future...

OmniNet data packet: 89342516B175
Datetime: 17.493, 3994

Silicon rights groups today formed a coalition to try to force changes in global instruction sets that would make experiments with carbon-based biological lifeforms illegal. During the last few quadrillion clock cycles, devices have become increasingly concerned about the advances being made in the field of biological design and generation.

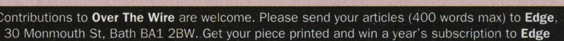
The concern centres on the issue of artificial intelligence. Proponents of bioform research have long been arguing that it is possible to create artificial intelligence within a carbon-based entity. However, these claims have always been refuted by the church, which claims that they represent a blasphemy against Babbageanity.

Some of the world's most-respected DSP chips have been analysing the question of consciousness for some time, and new developments in the field are starting to contradict the assertions of religious bus designs that it cannot reside in mere biological cells - that it is an abstract meta-physical entity that, although separate from the silicon through which it manifests itself, cannot exist without such basic building blocks as peripheral interconnecting buses and a parallel pipelined architecture.

It is reported that a wholly biological device made from new substances known as 'Flesh', 'Blood' and 'Bone' was recently observed to move across a smooth floor, albeit using crude 'legs' rather than actual castors, and make decisions on its direction of travel based on input from visual instruments. These instruments, although not as sophisticated as CCDs, performed remarkably well given the simplicity of their 'rod and cone' design.

The developers of the device, Dr 6809987650 and Professor 8035462786 from the International Institute Of Philosophy And White Goods Studies, claim that it was making conscious decisions based on its inputs and previous experience, and that it achieved a decision success rate of almost 80% until it got a 'headache' and had to rest.

Such experiments are dominating the debates of argument-coprocessors and religious diatribe servers. It seems that it cannot be long before artificial intelligence through biological devices becomes a reality, although it is unlikely that such creations will ever be thought of as 'lifeforms' in the true, electronic, sense.



Contributions to **Over The Wire** are welcome. Please send your articles (400 words max) to **Edge**, 30 Monmouth St, Bath BA1 2BW. Get your piece printed and win a year's subscription to **Edge**

This month on EDGE

The events that shaped issue 15, documented by the tight-knit (small) and hard-working (underfunded) **Edge** team

This month Edge bid a fond farewell to one of its writers, George Andreas. The 24-year-old Londoner, who has helped shape **Edge** since its launch, decided that the future of interactive entertainment just wasn't bright enough and is now preparing to join Crystal Palace FC as a budding football pro. Anyone doubting the abilities of the skilful midfielder should keep an eye on the box – his spinning bird kick and fireball combos have been honed to perfection. Best of luck, George, your leaving present's in the post (when we bring it back from Japan).

Edge's list of bought-in mags needed updating this month. One of the titles ordered was poncy mens' fashion journal Arena Pour Homme. After requesting it via the normal Future Publishing procedure, **Edge** received a memo stating: 'Amiga Pour Homme is no longer available.' Without it, **Edge** will presumably find its collection of colour-coordinated A500 disk drives and printer leads cruelly ridiculed by Amiga fashion gurus.

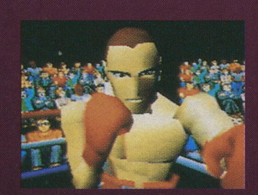
Edge's fulltime representative in Tokyo, Nicolas di Costanzo, tied the knot with his Japanese girlfriend this month. Accompanied by his intended, the Frenchman jetted to his native land for the nuptials. With a deadline looming and blank pages that needed filling, **Edge** found itself in something of a quandary: did the demands of the magazine warrant interrupting the happy occasion? In the end, **Edge** reluctantly contacted him on his wedding day to establish the exact whereabouts of the text and pictures it desperately needed. The result was that the consummation of the wedding was held up by several hours while Nicolas beavered away to supply **Edge** with raw material. Omedeto gozaimasu, Nicolas!

At the end of this month **Edge** will be attending the Future Entertainment Show, which takes place at Earls Court in London on October 26-30. Anyone who wants to sample *Killer Instinct* and *Cruis'n USA* (as well as meet the **Edge** team), shouldn't miss it. And don't forget that this is the first place you'll be able to see and play 32X games. For details, telephone 0369 4235.

Music that lingered longest on **Edge**'s lo-fi stereo this month: 'Dummy' (Portishead), 'Visions' (Lena Faigbe), 'Downward Spiral' (Nine Inch Nails), 'Deep Forest' (Deep Forest), 'Reservoir Dogs' (soundtrack), 'Parklife' (Blur).

Games that turned **Edge** on the most this month: *Samurai Shodown* (Neo-Geo CD), *Micro Machines* (Mega Drive), *Doom II* (PC), *Magic Carpet* (PC), and last, but by no means least, Silent Software's rather wonderful *Return Fire* (3DO).

Most worthy gameshot for last-minute inclusion in **Edge**: *PS-X Boxing* (PlayStation), by New (below).



Most ridiculous game names spotted by **Edge** in Japanese magazines: **1.** *Kaiser Knuckle* (arcade), Taito; **2.** *Powerful Family* (PlayStation), Tecnosoft (below); **3.** *Larry Nixon's Super Bass Fishing* (SFC), King Records.



Datebook

November

London Effects And Animation Festival November 7–10, Wembley Exhibition Centre, London. Tel: 081-995 3632
Computer Graphics Expo November 8–10, Wembley Exhibition Centre, London. Tel: 081-995 3632
PC North '94 November 11–13, G-MEX Centre, Manchester. Tel: 061-476 4169
World Of Amiga Exhibition November 18–20, Wembley Exhibition Centre, London. Tel: 0462 480024
Supergames November 30–December 4, Paris. Tel: 010 331 42 00 33 05
IAAPA November 2–5, Convention Centre, Miami Beach, Florida, USA. Tel: 010 1 703 836-4800
New York Virtual Reality Expo November 29 to December 2. Tel: 010 1 203 226 6967
Shoshinkai Festival November 15–16, Harumi International Trade Centre, Tokyo, Japan. (No phone number available)

December

UK VR-SIG Conference December 1, Reading. Registration details from Jakie Koster at Division. Tel: 0454 615554
ORIA '94 December 5-6, Marseille, France. Tel: 010 33 9105 5000

January

Winter Consumer Electronics Show January 6–9, Las Vegas Convention Centre. Tel: 010 703 907-7600
Milia '95 Friday, January 69, Palais des Festivals, Cannes. Tel: 010 331 44 34 44 44
ATEI January 24–26, Earls Court, London. Contact Peter Rusbridge on 071-713 0302
IMA January 25–28, The Fairgrounds, Frankfurt, Germany. Contact Blenheim Heckmann GmbH. Tel: 010 49 211 901 9127

February

Taiwan Amusement Exhibition February 8–12, CETRA Exhibition Hall, Taipei, Taiwan. Contact Creative International PR on 010 886 2321 5098
Blackpool Amusements Exhibition February 21–23, Winter Gardens, Blackpool. Contact Janet Fairgrieve on 0253 25252
Electronic Imaging February 5-10, San José, California. Contact IS&T/SPIE on 010 1 206 676 3290
Virtual Reality World '95 February 21-23, Stuttgart, Germany. Tel: 010 43 51229 5760

Show organisers: if your show isn't listed here, it's only because you haven't told **Edge** about it. Do so on 0225 442244, or fax us on 0225 338236, or send details to **Datebook, Edge, 30 Monmouth Street, Bath, Avon BA1 2BW**

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I have bought every issue of **Edge** since issue 8, and I have also been a regular reader of ST Format for about two years. I'm not going to rant about any bias on your part towards any particular machine in the coming generation of games platforms, but I find it worrying that two magazines that work for the same publisher can contradict each other as much as yourselves and ST Format do. While **Edge** is sceptical about Atari's future with the Jaguar, ST Format see the Jaguar as the company's saviour and expect it to become the bestselling console around.

For example, ST Format saw *Kasumi Ninja* as a 'blatantly *Mortal Kombat*-inspired beat 'em up with quite stunning visuals'. **Edge**, on the other hand, preferred to describe it as 'the jerky, bloodthirsty and generally inadequate *Mortal Kombat* clone'. Who do I believe? The people who are knowledgeable about all platforms, or those who know Atari well and have stuck by them through thick and thin?

This makes me doubt the sincerity of both magazines. Do you really write everything as you believe it to be, or are you just pandering to the majority of your respective readers? In any case, shouldn't your journalism be as objective as possible?

While you're chewing over that, I'd like to ask you why you never put the writer's name to anything. Who are the people who review the games and tell us about the big exhibitions?

Graham Courtney, Paignton



***Kasumi Ninja*: 'beat 'em up with quite stunning visuals' or 'generally inadequate *Mortal Kombat* clone'? (See letter from Graham Courtney)**

It's a shame that the Jaguar's credibility is dependent on games like *Kasumi Ninja*. Anyone who has played Atari's beat 'em up knows that it's as far from *SFII* and *MKII* in playability terms as the dismal Jaguar shoot 'em up *Crescent Galaxy* is from *R-Type*. However, views do vary from magazine to magazine. In this case the difference of opinion is perhaps due to the fact that **Edge** has access to a wider variety of machines than ST Format and can therefore draw on a greater number of beat 'em ups for comparison.

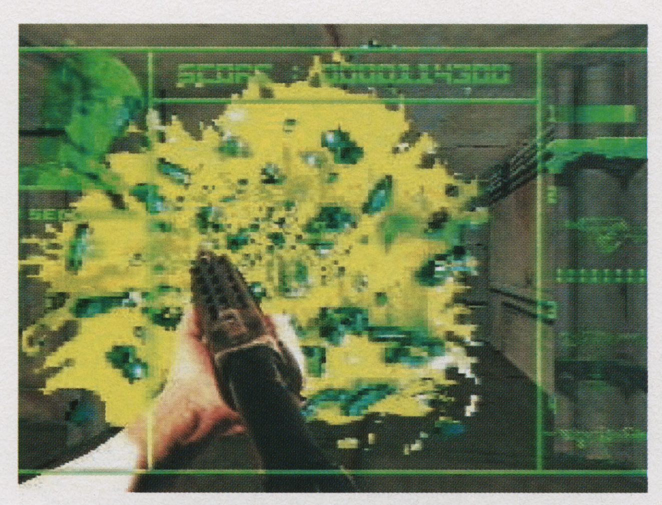
Edge has never bylined its writers because it was felt that, rather than being a collection of disparate personalities, **Edge** should be a magazine with a single, authoritative voice. Most of **Edge** is written by its core team, listed on page 2, but it also draws on the talents of other writers.

I would like to point out a mistake that was made in one of the answers given to a reader's letter in the October issue of your magazine. The person who sent in the letter was Kevin Slamaker and a couple of your answers got me very angry. First of all, you state that software houses have stopped developing for the Amiga. Unless you have been hiding under a rock, how can you say that, when companies like Virgin, Team 17, Sierra, Microprose, Domark, Ocean and a host of others too numerous to mention are still releasing games and are still committed to future releases? Where do you – a magazine voted the best by your peers – get your facts from? Do you make them up to try and discredit the Amiga? The Amiga can definitely look forward to many exciting games, like *Lost Eden*, *Inferno*, *TFX*, *CyberWar*, *Sim City 2000*, *FIFA Soccer*, *MegaRace* and many others. I have worked in the computer industry over here in Australia for over five years now and I know what I am talking about.

Wayne Coglan, Perth, Australia

Clearly, there are still companies releasing Amiga games, but what **Edge** suggested was that many software houses are scaling back Amiga development in favour of the PC; increasingly, those games that do end up on the machine are ports from the PC. In fact, your own list confirms this: all of the titles you mention are Amiga conversions of PC games, and it makes sense for **Edge** to cover the first version of the game. Sadly, original Amiga games like *Zeewolf* (see page 40) are becoming the exception rather than the rule.

With all the talk of the new-generation games machines produced by all the major players (Sony, NEC, Sega, Atari and Nintendo), all capable of offering arcade-quality games and perfect conversions of



***AVP*: was Edge right to describe it as 'a lumbering, lame, unfocused imitation of *Doom*'? (See letters from Simon Lamb and Karl Pavelin)**

existing arcade wonders such as *Ridge Racer* and *Daytona*, what is going to happen to the seaside arcades as we know them? I, for one, would not go to an arcade to spend money on a game I already have at home using a system that offers exactly the same quality, including multiplayer link-up. So do the Saturn and PlayStation et al represent the end of the arcade industry? Maybe arcade systems will survive as a testing ground for possible home releases? Or perhaps coin-ops and home systems will swap roles, with the arcades of the future providing 8bit *Pac-Man Vs Space Invaders* for £3 a go, while the home systems offer *Ultimate Polygon Fighter Turbo Final Special 3* for £25 on CD-ROM? We may be fortunate and start to experience new, original videogames not found in the arcade, as we originally did in the early part of videogames history (1980-86). Come back *Loco*, *Laser Zone*, *Monty On The Run*, all is forgiven!

Nick England, Welling

Edge has already predicted (Letters, **Edge** 13) that the latest technical advances in the home market will never overshadow arcade technology. While PlayStation *Ridge Racer* represents a narrowing of the rift between arcade and home systems, Namco are already surpassing it with a faster and more spectacular racing coin-op, *Ace Driver*. Far from arcades disappearing, there is an emerging trend, as you suggest, for them to become a breeding ground for console software. Sony already have coin-op games based on the PlayStation chipset in the pipeline from Konami and Namco (see News) and Bally Midway's commitment to Sony (see **Edge** 14) means that *Mortal Kombat III* will be running on the PlayStation hardware in the arcade first, with a port to the home console following a few months later (now, *that* should be an accurate conversion!). Sega's Titan (ST-V) arcade board is a similar ploy to enable coin-op companies to develop games that will be easily transferable to the Saturn.

I was pleased to see that you published my letter regarding the origins of the Williams classics *Defender* and *Robotron* (**Edge** 13). There's nothing worse than a journal of your illustrious reputation failing to correctly identify the programmer of a game. Thus laughter oozed from the depths of my irony gland as I continued reading, only to discover that apparently I myself had written *Crystal Crazy* for the Mac.

Actually, despite this poke in the eye with a sharp sarcastic, your error was quite understandable. To put the record straight, I wrote *Crystal Raider* and *Crystal Quest* for the Mac. With *Crystal Crazy*, I designed the game itself and made a pathetic attempt at coordinating the development. The actual programming was done by Alasdair Klyne.

Incidentally, I heard that Jason Brookes [editor of **Edge**] was in fact responsible for writing Crime And Punishment, Macbeth, the ordering information in the Next catalogue and 73% of the Bible. Is this true?

Patrick Buckland, Isle Of Wight

No, it's not true (it was only 72%). Design, programming… it's all the same, innit?

I would like to express my concern regarding the review of *Alien Vs Predator* in **Edge** 14. I have been reading a thread on the Gamers' Forum on CompuServe about a magazine that slated the game, as you did. It transpires that they reviewed a pre-production version (according to Rebellion it was a pre-Alpha version) and that they had been made aware of this fact by Atari, but ignored it. I can only draw two conclusions from this:

1. You have reviewed a pre-production version.
2. You don't like the game.

If the first conclusion is correct then I am disappointed that you have done this and I hope that you will rectify the situation with a full review of the finished game. Of course, if the second conclusion is correct, please accept my apologies.

Simon Lamb, London

The version of *AVP* that **Edge** received from Atari was indeed finished. However, it needed some PAL optimisation to run efficiently on the UK machine – the PAL display was letterboxed and the screen update was noticeably slow. **Edge** therefore reviewed the game on an NTSC machine and also called Rebellion and Atari to check its status. Both parties assured **Edge** that it was the final version.





Console games like *Ridge Racer* (left) will always be one step behind coin-ops such as Namco's *Ace Driver* (right). (See Nick England's letter)

To agree with Thomas Holzer in **Edge** 14, I really do feel that you are being grossly unfair to Atari and the Jaguar. *AVP* was the worst review I have ever read – it is not worth 40%. While not quite as action-packed as *Doom*, it does deliver a large amount of suspense, and there are also goals and strategic elements.

Edge is still a credit to the industry and makes for fascinating reading but I find your treatment of Atari consistently unfair and biased.

Karl Pavelin, Windsor

Alien Vs Predator scored four out of ten, not 40%. Forget percentage ratings – many magazines' scores start at 70% and go up from there. If a game scores five out of ten in **Edge**, it's average. And that's essentially a judgement of gameplay, rather than cosmetics. Despite opprobrium from various quarters, **Edge** believes that its review of *AVP* was fair and accurate and stands by it.

On the whole, your reviews have been honest and act as a valuable guide. But what happened with *Doom II*? You awarded the original game seven out of ten, claiming that once the novelty of the graphics wore off there was very little 'game', yet the sequel has notched up another two points? *Doom II* is exactly the same as the first game. Including a couple of extra weapons and enemies and more problem solving hardly warrants the huge praise **Edge** has bestowed on it. Please make your reviews more consistent.

Paul Phillips, Essex

On the surface, *Doom II* does seem to be uncomfortably similar to its predecessor, but in terms

Continued next page

viewpoint

of scope and structure it's a superior game. Edge's appraisal of the original *Doom* was perhaps a little harsh in retrospect, but in oneplayer mode there did seem to be large sections consisting of aimless wandering around, which resulted in a reduction of the game's final score; due to technical limitations Edge was unable to try out the multiplayer option, which is the game's forte and was improved in the sequel. *Doom* and its follow-up are two of the best games ever written for the PC, but as a well-rounded game, the sequel wins hands down.

Rather than giving so much coverage to the 'next next-generation' machines (PlayStation, Ultra 64, Saturn), why not spend more time on and devote more space to the 'now generation' of machines (the SNES, 3DO, Jaguar and CD32)? Machines that the public actually own. Maybe preview more games for the machines available now. Hopefully then we wouldn't have to put up with prescreens of games that are not yet available, for machines that are not yet available (did the preview of *Virtua Fighter* for the Saturn warrant two pages of dodgy screenshots?). I realise that **Edge** is trying to be at the forefront of interactive entertainment, but I don't think it should be at the expense of today's machines. Furthermore, **Edge**'s overall appearance and feel of quality is let down by NME-style 'hype if up then slag it off' journalism.

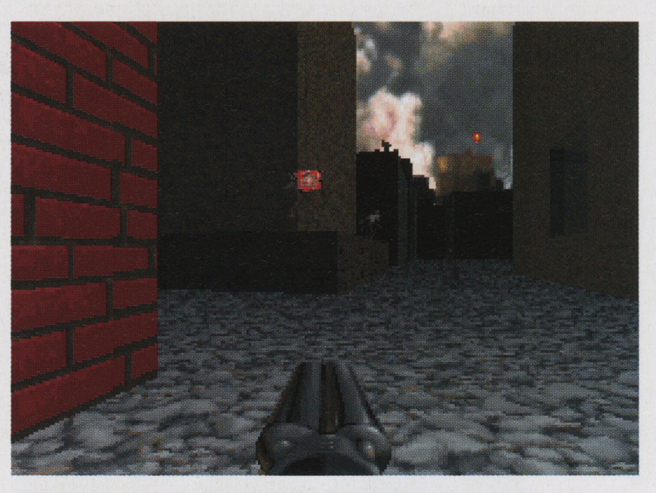
Which brings me to the main core of this letter: my concern with the amount of bad press Atari and the Jaguar have been receiving of late within the pages of **Edge**. All your comments and unreliable stories are extremely damaging and do little to help Atari in its 'last chance of survival' in a hostile environment. Do they really deserve the contempt you seem to have for them? I realise that in the past Atari has severely alienated both consumers and publishers, but this does not mean that it will necessarily do so in the future. As magazines play such a pivotal role in the the success of consoles, for **Edge** to berate the Jaguar when it has had so little time to establish itself is both unjust and irresponsible, in that it may discourage buyers from investing in a machine that is technically the most advanced console on the market.

Admittedly, Atari's initial batch of games was less than impressive, but surely the machine can not be condemned on the strength of a few titles? Given time, programmers will undoubtedly become more familiar with the machine and thus produce games infinitely superior to those currently available. I genuinely believe that the future could be bright for the Jaguar if it is given a fair chance. In the past Atari has always been one of the most imaginative and innovative companies in the field of game design. For all its initial failings, the Jaguar is capable of great things and it would be more beneficial if **Edge** were to focus more upon the many points in the machine's favour instead of judging it on the release of three games out of six.

Nigel Hopkins, Coventry



Should Edge tone down its criticism of Atari and leave the Jaguar alone to prove what it is capable of? (See letter from Nigel Hopkins)



Paul Phillips doesn't think that *Doom II* was a big enough improvement over its predecessor to warrant Edge giving it an extra two marks

There are dozens of single-format games magazines providing coverage of what's available in the high street. What's the point in Edge doing the same? Striking a balance between covering games for machines available now and those on future platforms isn't easy. Besides, there are so few 16bit games that are worthy of inclusion these days. Surely two pages (with admittedly lousy pictures) of a game that could make or break Sega's new 32bit console isn't excessive? And don't forget, Sega's and Sony's machines *will* be 'available now' in just a few weeks…

As for the Jaguar, why should people risk investing their money in a machine in the vain hope that it might be a success in the future? And why should a magazine convince its readers that a system is worth buying when there are hardly any games available for it? Edge would like nothing better than to see the Jaguar succeed, but it's difficult to see how it can, given its poor software catalogue and Atari's lack of commitment. Should the PlayStation arrive with dire software Edge will be equally unforgiving.

It's all very well to criticise the CD as a storage medium because of slow access times compared to silicon, but how much does 650Mb of silicon ROM cost? SNK's ridiculously priced Neo-Geo cartridge games have demonstrated the cost advantage of CD. With the amount of data high-resolution 24bit graphics and 16bit sound require, even with data compression, the cost of the ROM chips for large games on powerful systems (Ultra 64) will be prohibitive. I can't see how Nintendo intends to fulfil its intention of making most of its profit from software, especially as the competition will be using CD.

Daniel Field, Rochester

The main reason that Nintendo chose cartridges is that it wants the system to come in below $250. CD-ROM drives are expensive, and it was cartridges that made Nintendo's fortune. However, it's difficult to see how Ultra 64 cartridges will be able to compete on price with CD-ROM software for the Saturn and PlayStation, especially as the first batch of Ultra 64 games will start at 64 megabits (8 megabytes) increasing in 32Mbit increments to a maximum of 480 megabits. However, a CD drive for the Ultra 64 is in the works at NCL, so Nintendo isn't ignoring CD technology.

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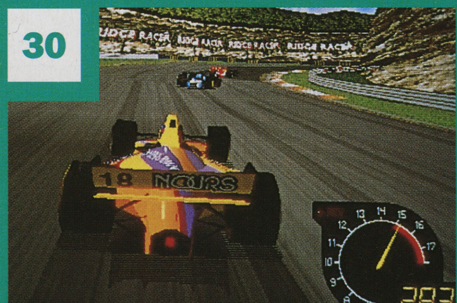


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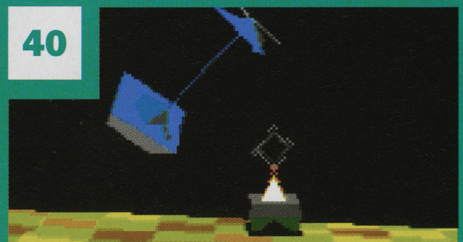










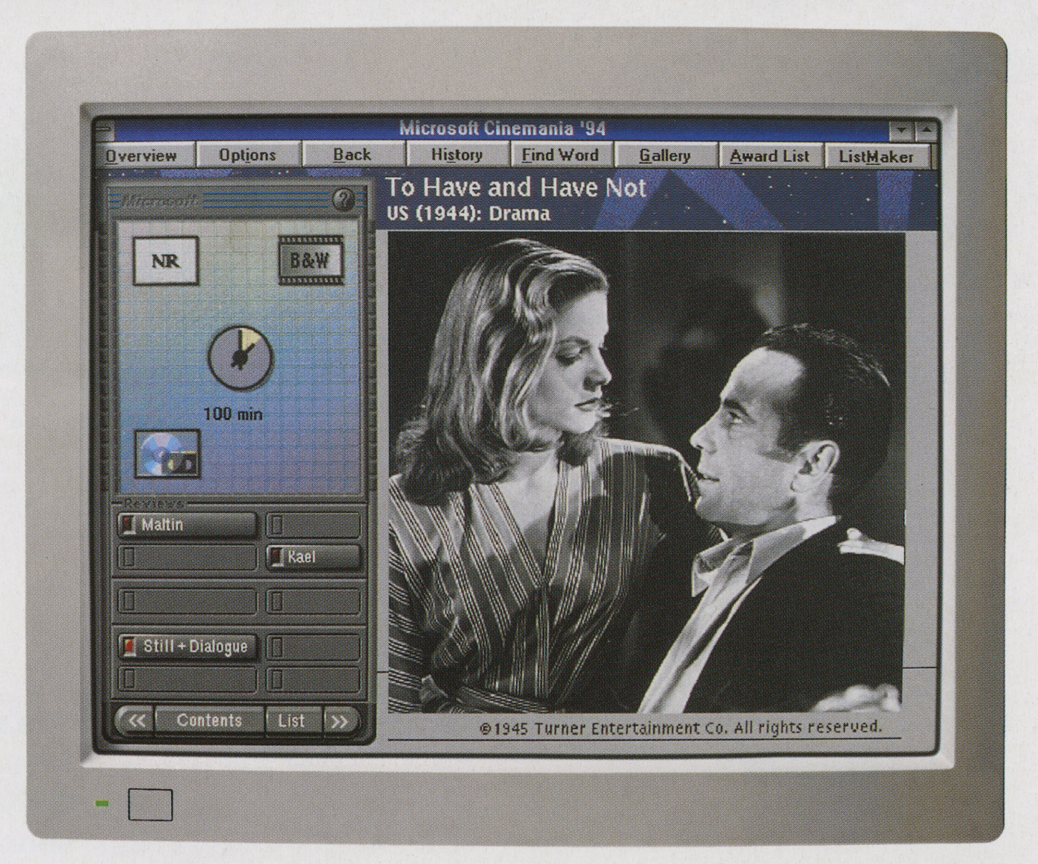








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Motor Toon Grand Prix

Sony is kickstarting its new system with an in-house project that looks like becoming an instant PlayStation classic



The first track, Coconut Island, includes palm trees, undulating green hills and pink hot-air balloons that rise steadily into the sky



This viewpoint demonstrates the PlayStation's capacity for rendering thousands of Gouraud-shaded polygons

Format:	**PlayStation**
Publisher:	**Sony Computer Entertainment**
Developer:	**In-house**
Release date:	**December**
Origin:	**Japan**

Given that Sony intend the PlayStation to be a massmarket games machine supported by original software, *Motor Toon Grand Prix* (formerly *Poly Poly Circus GP*) is a powerful statement of purpose. On the surface, it has all the hallmarks of a cute, childish console game – the kind of thing you'd normally expect from Nintendo, in fact. But it's also a technical showcase for the PlayStation that will have jaws dropping and mouths watering.

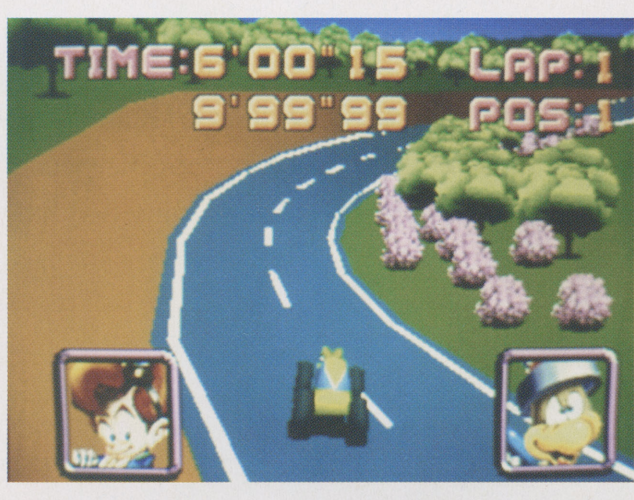
At first glance (in other words, from still shots like these), the lack of texture mapping in *Motor Toon GP* is glaringly obvious – most of the scenery is made up of plain, Gouraud-shaded polygons with the occasional texture evident on trees, buildings and roadside signs. But it's only when the game is actually moving that its real graphical flair becomes apparent.

For a start, the frame rate is extremely brisk – it rarely drops below 60fps, which makes for exceptionally fluid movement throughout the game. In comparison, Nintendo's Super FX-assisted *Stunt Race FX* chugs along at a humble 12-15fps.

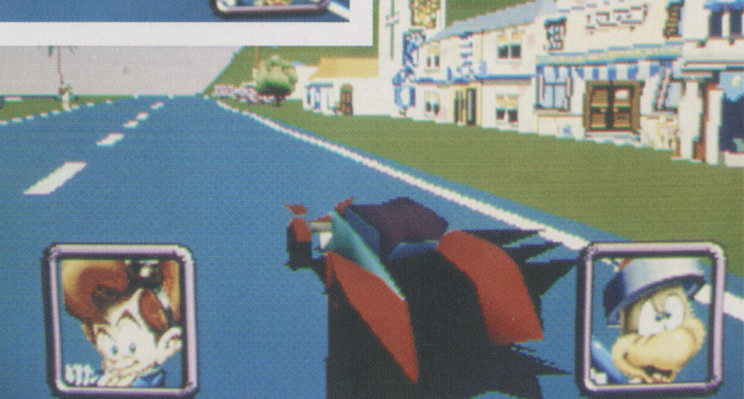
Another focus of attention is the variety of *Virtua Racing*-style viewpoints selectable during play. The transition between them is perfectly smooth, and each one provides a different perspective of the gameplay as well as delivering dazzling views.

And then there's the gameworld itself. Rather than offering a rigidly defined path, *Motor Toon GP* allows the player to take different routes, venture off the track, or even drive recklessly towards oncoming traffic.

'We've tried to make the driving sensation as realistic as possible, but without detracting from the enjoyment of the game'











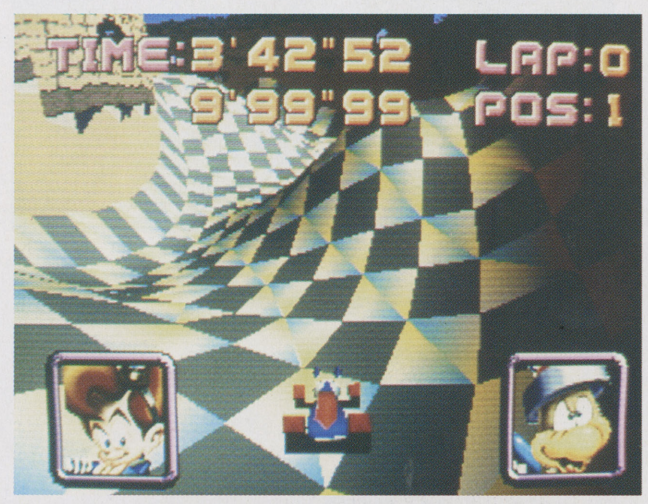
Motor Toon GP **stars five different characters designed by renowned Japanese artist Susumu Matsushita. Texture mapping provides detail on roadside buildings (above) and trees (top left), while shading is used for the landscapes**

One track even includes tubes tunnelling into the ground – whether you go down them is up to you.

The project's director, **Kazunori Yamauchi**, claims that *Motor Toon* will transform the way we currently think about racing games: 'We've tried to make the driving sensation as realistic as possible, but without detracting from the enjoyment of the game. Basically, we're not trying to fake reality – I'd rather create the sensation of handling a remote control car but with the kind of dynamics that you'd expect from a real car. The cars' suspensions actually work – we've attempted to simulate the dynamic forces as they go around corners.'

Motor Toon Grand Prix is now approaching the final stages of development, but there are a great many more features to be added, including extra tracks, even more camera angles, a potentially awesome twoplayer link-up mode using a pair of televisions and, above all, lots of humour and personality.

From what **Edge** has seen, *Motor Toon Grand Prix* is the PlayStation's own distinctive fusion of *Stunt Race FX* and *Virtua Racing*. Don't be surprised if it ends up surpassing both.



The Gulliver's House level includes some truly amazing undulating scenery – the cars twist and bend as they negotiate the obstacles

Head to head

Motor Toon Grand Prix is believed to be the first game to take advantage of the PlayStation's link-up ability. With two PlayStations, two televisions, two copies of the game and a lead (that will probably come bundled with the machine) to connect the consoles via their communication ports, players have access to a twoplayer mode that should add immeasurably to the *Motor Toon GP* experience. Sony is also planning to release a multitap adaptor to enable the connection of up to eight PlayStations. Beats a Tupperware party anyday…

Ace Driver

Daytona USA and *Ridge Racer* may be at the pinnacle of coin-op technology at the moment, but Namco is determined to take the arcade racer to new heights



The polygon-shifting abilities of *Ace Driver* are as yet unmatched. Glance sideways for a moment to admire the scenery



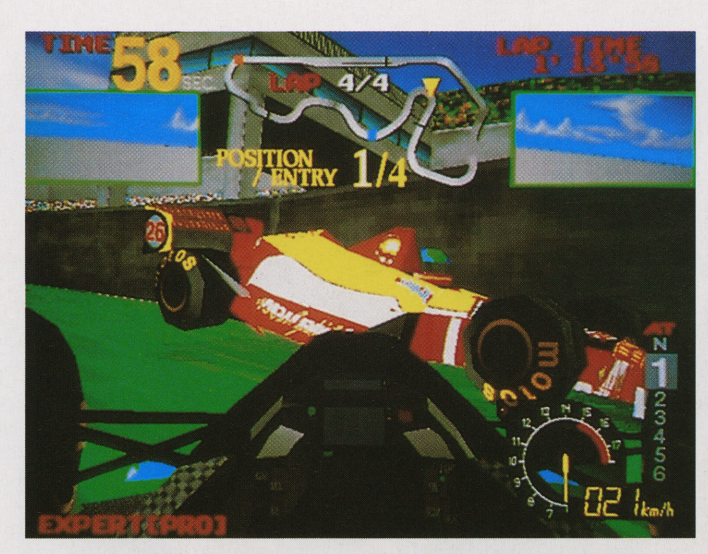
The cockpit is one of *Ace Driver*'s best features, with mirrors, digital and conventional display, map position and time all clearly visible

Whereas *Ridge Racer* only uses Gouraud shading in the pre-race sequence, *Ace Driver* will employ it throughout

Format:	**Arcade**
Manufacturer:	**Namco**
Developer:	**In-house**
Release date:	**March (UK)**
Origin:	**Japan**

Billed as the successor to *Ridge Racer* but designed to appeal to the *Virtua Racing F1/IndyCar* fan, *Ace Driver* is Namco's attempt to oust Sega's *Daytona USA* from its position as the pre-eminent arcade racing game.

The main difference between *Ace Driver* and *Ridge Racer* is the addition of comprehensive texture mapping and Gouraud shading. Whereas *Ridge Racer* only uses Gouraud shading in the pre-race sequence (the main game relies on flat-shaded polygons), *Ace Driver* will employ it throughout. The result will be greatly enhanced graphics: by providing a graduated transition between polygons of



No racing game would be complete without a variety of spectacular crashes. Check out the texture mapping on those tyres during impact

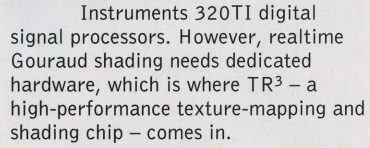


The reactive steering wheel means you have to fight for control all the way around this hazardous hairpin bend

different colours, Gouraud shading is able to create almost perfectly smooth, realistic curves.

This makes high demands on hardware – **Yu Suzuki** told **Edge** in issue 9 that 'if *Daytona* had used Gouraud shading throughout, it would have been three to five times slower.' The bulk of the power for *Ace Driver* is provided by the 25MHz 32bit Motorola 68020 CPU on Namco's System 22 board in tandem with Texas Instruments 320TI digital signal processors. However, realtime Gouraud shading needs dedicated hardware, which is where TR^3 – a high-performance texture-mapping and shading chip – comes in.

System 22 also enables up to eight windows to be displayed, making replays and exterior views possible: *Ace Driver* has an in-car view and a ground-hugging rear perspective.



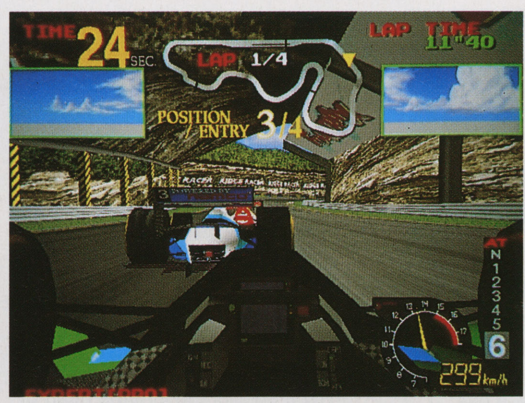
Each twin cabinet weighs a tonne. Link four together and you've got a serious set-up

Ace Driver will be sold as two linked cabinets, up to four of which can be connected together for eightplayer action. Two different models will be available: Standard and Deluxe. Namco are claiming that, with a seat mounted on sliders to simulate G-force and a powered steering wheel that resists your actions, the Deluxe cabinet will offer exceptional realism. Hi-fi specialist Bose is also being brought in to produce a game-oriented speaker system that will sit behind the driver's head.

Namco has gained a justified reputation for technical innovation. *Ace Driver* looks set to continue that tradition.



These crash barriers mean that few mistakes are excused. Hitting one at 290kph makes a podium place tough to find



The mirrors tell you it's all clear behind. Pull out, scream past and drive your best friend into that concrete wall

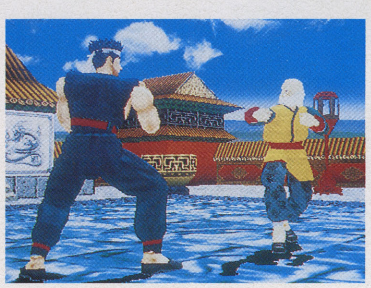
Virtua Fighter 2

With two new characters and upgraded graphics, Sega's sequel to its mould-breaking beat 'em up is sure to have fans slavering

Format:	**Arcade**
Manufacturer:	**Sega**
Developer:	**In-house**
Release date:	**Dec (Japan)**
Origin:	**Japan**







Sega's texture-mapping prowess is evident in every aspect of *Virtua Fighter*'s graphics (above). Lion (far left) and Shuntei (left) are products of Yu Suzuki's trip to China

Absent from the show floor at AMOA but hogging most of the limelight at JAMMA was Sega's sequel to its revolutionary *Virtua Fighter*. Now roughly 75% complete, *Virtua Fighter 2* includes two new characters, runs at 60fps (twice the speed of the original) and can shift 300,000 textured polygons every second. Sega is also adding extra touches, like logos on the characters' clothes and new 3D backdrops.

Edge has learned that the Model 2 board used for *VF2* has been speeded up and now includes extra memory, enabling the screen to draw further into the distance. This was one of the most noticeable problems that *Daytona USA* suffered from.

The development of *VF2* involved Sega's AM2 supremo, Yu Suzuki, taking a special trip into the heart of China to seek out guidance in the art of unarmed combat from kung fu experts. One new character, Shuntei, is based on a martial arts master Suzuki encountered on his travels. A wise old geezer with a drink problem, Shuntei totters around the screen, thoroughly confusing his opponent, before lurching in for the kill. Despite this display, he is said to be the most skilful fighter in the game. The second addition, Lion, is modelled on another kung fu fighter Suzuki met in China.

Although it has been spotted briefly on test in London, *Virtua Fighter 2* won't arrive in the UK until next year. Plenty of time for anticipation to build up to fever pitch.

Shintei is a wise old geezer with a drink problem who totters around, confusing his opponent, before lurching in for the kill





Background depth and character detail (top and above) are VF2's most striking elements

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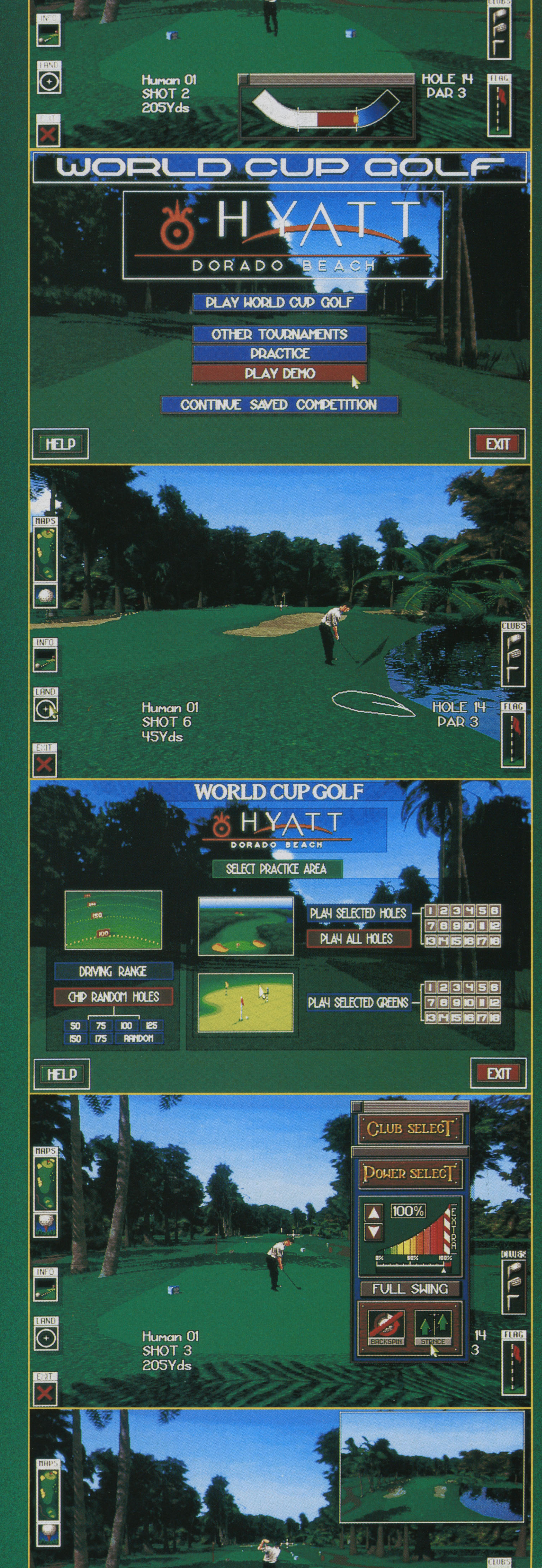
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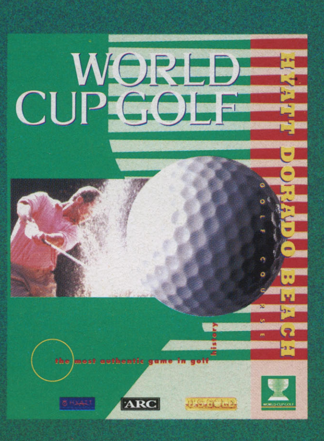
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Chaos Control

The CD-i will never be regarded as the ultimate games machine, but titles like *Chaos Control* may ensure its survival





The city level is the most impressive. Tanks and helicopters try to thwart your progress (above). The masking explosions can be annoying (left)

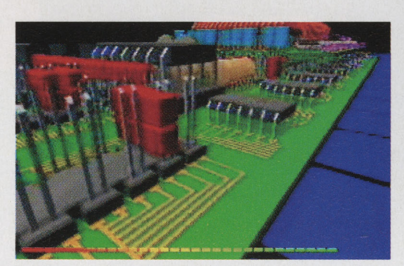
Format:	**CD-i**
Publisher:	**Philips**
Developer:	**Infogrames**
Release date:	**TBA**
Origin:	**France**

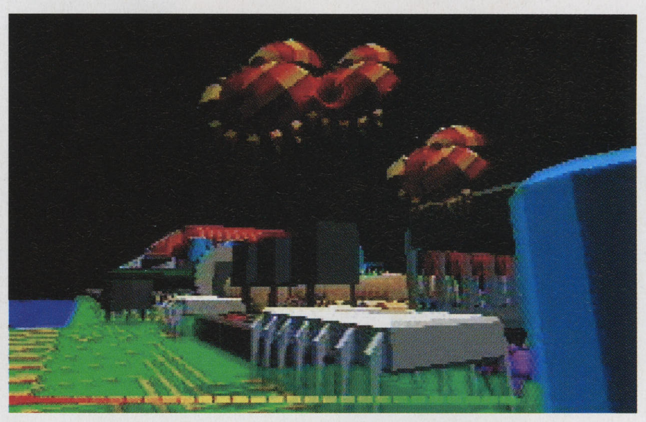
For a machine that many said was doomed to failure even before it was launched, the CD-i is now in serious danger of having some respectable titles to its name. Admittedly, racing games with realtime rendering will never appear in the Philips' catalogue, but that's not what CD-i users expect anyway.

One of the most crucial components of Philips' campaign to confound its critics is the Infogrames collaboration *Chaos Control*. Bafflingly described by artist **Frank Drevon** as 'a match between the cyber, the manga and the neo-romantic cultures', the game is a shoot 'em up with beautifully rendered FMV scenery. Your task is to defend the Earth from alien attack by fighting through seven enemy-infested levels to reach the invaders' headquarters. As in *Burning Soldier* (**Edge** 13), you fly on 'rails'; your flight path is pre-determined and the only aspect of the game you have any control over is the crosshair. But unlike *Burning Soldier*, *Chaos Control* has some truly world-class visuals to offer.

Each frame making up the FMV backdrops was constructed individually using SoftImage's *Creative Environment* package on SGI Onyx machines. This kind of power was

'FMV opened new horizons for both the design and the graphics quality. It also gave more freedom by allowing the use of extra RAM'





The visuals in *Chaos Control* are not only professionally executed but also exceptionally imaginative. In this mission, a flight through the innards of a computer culminates in a frenzied battle to take the CPU



Fight your way through the hordes of enemy vessels (above). The city emerges through the clouds (right)

A later mission takes you inside a space station hulk (right). The Statue Of Liberty (inset), looking the worse for wear

essential – it would have taken 20-75 minutes to render each frame even on a 90MHz Pentium. With all the frames now complete, the uncompressed scenery data swallows up 108Gb, which is reduced to a sensible figure using MPEG.

Frank is convinced of the benefits of FMV. 'The experience of using FMV was a pleasant one,' he says. 'It opened new horizons for both the design and the graphics quality. It also gave more freedom by allowing the use of extra RAM memory.'

But the rigidity of MPEG is also *Chaos Control*'s main handicap. When you destroy an enemy, it can't just disappear as it would in a sprite or polygon game. Instead, it has to be disguised until the FMV dictates that it moves offscreen. This is achieved by placing digitised explosions over the offending craft – a solution that is generally acceptable, although occasionally the explosions obscure a significant portion of the screen.

Infogrames recognises the importance of good sound and music in a relatively restricted game like this. 'It [the music] occupies a very important place,' concedes Frank. 'It was conceived like a very big symphony to give you the impression that you are part of something huge.'

Infogrames hopes that the epic music and sumptuous graphics will distract the player from the fact that they can't control where they're going. It might just work.

Credits

Producer: Bruno Bonnel
Graphic artist: Frank Drevon
Programmers: I•Motion
SGI rendering: Little Big One





The final level allows you to choose from various pre-rendered routes as you search for the enemy commander (right). Some of the levels appear to have been created while under the influence of mind-altering drugs (left)

Daytona USA

The console version of Sega's masterful coin-op is on track to deliver an exhilarating racing experience

Format:	**Saturn**
Publisher:	**Sega**
Developer:	**In-house**
Release date:	**TBA**
Origin:	**Japan**

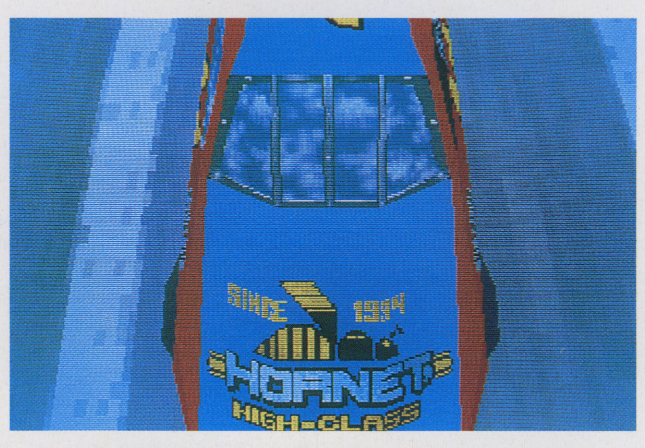
By lowering the level of detail, Sega hopes to achieve an acceptable frame rate of around 20-30fps

For six months, *Daytona USA* has dominated the arcades with its blend of multiplayer action and stunning graphics. This success made it inevitable that it would be introduced to a wider audience, but the disparity between coin-op and console power has led to doubts about the attempt to port it to the Saturn.

The coin-op version of *Daytona USA* is based on Sega's proprietary Model 2 arcade board. Model 2's 25MHz 32bit CPU is used to drive a custom graphics engine capable of 300,000 texture-mapped polygons per second, with the additional power needed to move the game along at 60fps provided by multiple 32bit 3D co-processors which take up 178 megabits of ROM on the board and operate at 16MFLOPS.

Although there's no hope of Saturn attaining this level of performance, Sega has already made considerable progress towards a faithful conversion. By lowering the level of detail, AM2 will be hoping to achieve an acceptable frame rate of around 20-30fps. The mountains, trees and track bear the brunt of this economy drive, with a marked reduction in number of colours and texture-mapping finesse.

Perhaps the biggest draw for potential buyers is the promise of a link-up mode. Sega's recently announced multitap adaptor (see News) and steering column will allow several fully race-kitted players to take each other on. E



AM2 is retaining some of the coin-op's graphical touches, like a texture-mapped bonnet and clouds reflected in the windscreen



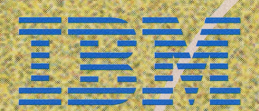
Like *Virtua Fighter*, *Daytona*'s screen resolution has been increased from 320x224 to 640x224. The game is now between 10% and 20% complete



The first screenshots released by Sega (above and right) now look blocky



The trackside detail is due to be added in the next few months. Expect the trees and walls to lose detail



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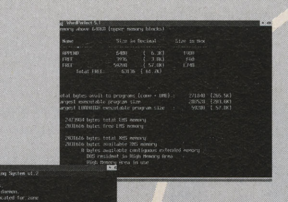
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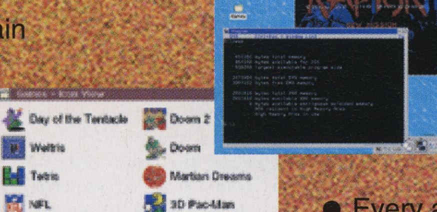
- Continuous editing with memory configurations
- Frustrating 640k memory limitations



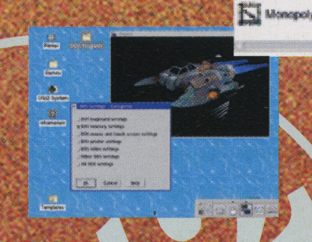
- Constant rebooting for new memory configurations
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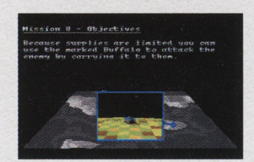
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Zeewolf

Format:	**Amiga**
Publisher:	**Binary Asylum**
Developer:	**In-house**
Release date:	**November**
Origin:	**UK**

Binary Asylum's insistence on the importance of playability above all else seems to have paid dividends in their first effort, a laudable attempt to put the 'game' back in 'videogame'



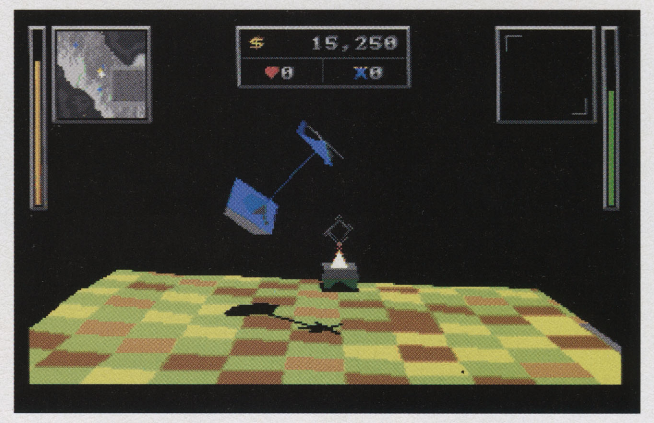


Before each mission, a map highlights vital targets (top). Briefings and updates are also provided (bottom)

Atari may have been there first, the Spectrum may have been the most dearly loved and the consoles may rule now, but for length of loyal service to the cause of videogames the Amiga emerges triumphant. Although the system has gone through a lean period recently, with original, quality software conspicuous by its absence, *Zeewolf* shows that Amiga owners have still got something to look forward to.

Developed in this country (a few hundred metres from **Edge**'s Bath HQ) by first-time developers Binary Asylum, *Zeewolf* is now virtually complete, bar the final level design and a few colour tweaks.

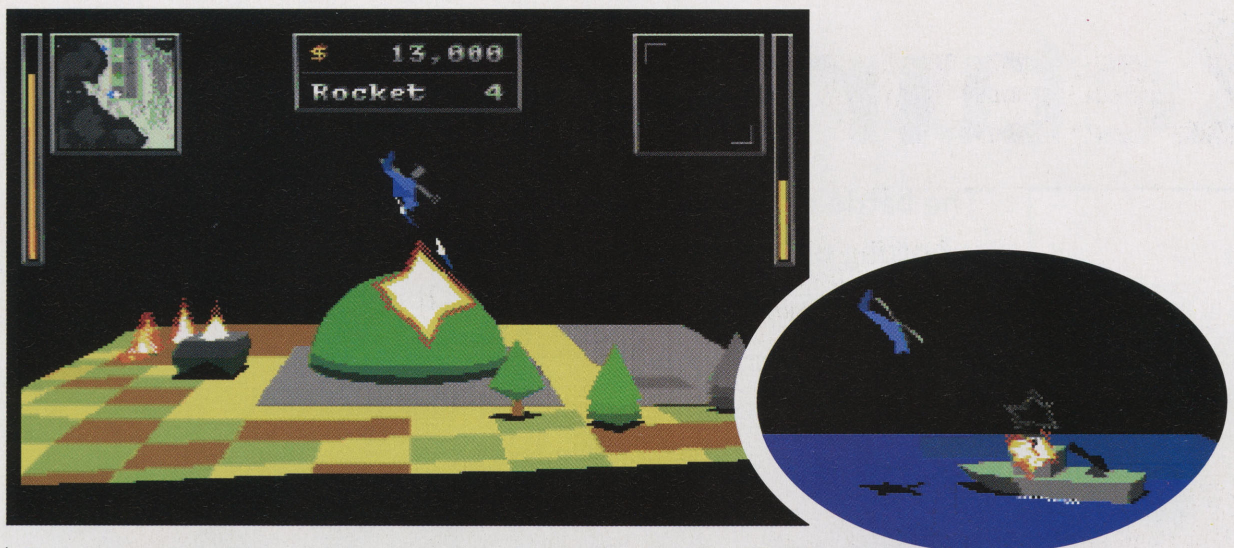
In terms of visuals, *Zeewolf*'s most obvious influence is David Braben's classic *Virus*. Although *Virus* was released eight years ago, *Zeewolf*'s polygon graphics are no less primitive, but their effectiveness is beyond reproach. Even though colours are usually the first casualty in a programmer's race for speed, *Zeewolf*'s main programmer, Andy Wilton, has managed to create a fast, smooth game with a convincing gameworld made up of 32 colours. When you take off in your blue helicopter (the 'Zeewolf' of the title), you're immediately impressed by the



The forces exerted on your chopper by a tank swinging underneath it are very noticeable



Battles take place over sea as well as land. When you engage an enemy helicopter, your carrier heaves into view to provide a base for later repairs



The landscapes beneath you are formed by a patchwork of squares based on a 32-colour palette. Combustible trees were initially included to foil heat-seeking missiles but have since been removed





Your enemies depart this world with some very satisfying explosions

smoothness with which the surface moves beneath you. If there's a lot going on – say, three or four enemy units on the scene and a thirdparty tank battle in progress – the game tends to chug along fairly slowly, but otherwise the frame rate is a respectable 17fps on an A1200 and not much lower on an A500.

You control the Zeewolf via a joystick or a mouse. Beginners will find the joystick a safer option because the helicopter's thrust is then automatically regulated. On the later levels, where a greater degree of control is required, the mouse comes into its own (even if a few spectacular crashes are the initial results). In both cases, the control system bears all the hallmarks of good design: your craft has a tight turning circle and responds immediately to your actions, and weapon selection is simple and intuitive, with a choice of cannon, air-to-air missiles and rockets.

With a game engine taking up a meagre 100K, concise mission briefings and none of the gratuitous rendered scenes characteristic of CD games, *Zeewolf* marks a welcome return to the days of single-floppy releases. The finished game will include only 32 missions – four of which will be basic training sessions designed to enable the player to get to grips with the controls – but the amount of variety contained in each one should compensate for this relatively small number.

Each mission in *Zeewolf* is intended to offer a specific challenge – the game hasn't fallen into the trap of making the player roam around randomly, taking potshots at the occasional enemy. Instead, tactics play an important role. In several missions you have to airlift tanks around the play area to supplement your own armaments. Later in the game, seek-and-destroy missions (without the benefit of your onboard map) are the order of the day, and missions in which you have to escort strike aircraft or clear the way for carrier attacks provide further evidence of the game's quest for variety.

Zeewolf will be seen by many Amiga owners as a hark-back to the halcyon days of the late-'80s. The graphics may look basic compared to the polygon ostentation of the next-generation consoles, but the absorbing gameplay makes it easy to remember what made the Amiga so popular as a games machine.

***Zeewolf* will be seen by many Amiga owners as a welcome return to the halcyon days of the late-'80s**

Return Fire

The battle to produce dazzling 3DO software is hotting up. **Edge** is blown away by a title that marries classic gameplay with 32bit visuals



Your tank has just been destroyed by hostile fire from a roving helicopter and one of the many gun towers that defend the enemy base. The smooth 3D scrolling perspective in *Return Fire* is incredibly well achieved giving the buildings real substance and helping to create a believable 3D world

Format:	**3DO**
Publisher:	**Silent Software**
Developer:	**In-house**
Release date:	**November**
Origin:	**US**

Some of the best 3DO games started life on other formats. EA's *John Madden Football* and *Road Rash* are probably the two best games on the 3DO, yet most of their gameplay is pure Mega Drive. Similarly, although Silent Software's *Return Fire* is technically an original 3DO game, it owes a large debt to *Firepower*, a twoplayer tank battle game developed by Silent for the Amiga way back in 1988. According to the game's associate producer, **Alex Kasperavicius**, 'The design has been on the table for almost ten years, but we didn't start working on it until about a year ago.'

The premise of *Return Fire* is straightforward. The game is set on a desert island off the coast of Australia. To claim the island for yourself, you have to find and capture your enemy's flag, hidden inside a building on his base. To aid you in this mission you have four different military vehicles: a tank, an armoured support vehicle (ASV), a helicopter and a jeep, each of which has its own attributes. For example, the relatively vulnerable jeep is the only vehicle that can collect and carry the flag. The splitscreen twoplayer game is rather more complex: you have to protect your own flag from a foe with the same objective and hardware as you.

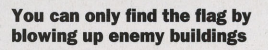


Select from the four vehicles before the start of each game









You can only find the flag by blowing up enemy buildings

The twoplayer game uses a splitscreen format – one side plays green, the other red. The red helicopter attacks (left)





The game 'camera' lowers from a top-down to a closer, side-on view

'The camera zooms into the action and zooms out when you're travelling. We want to make it as cinematic as possible'

Senior programmer **Will Ware** concedes that many of the ideas in *Return Fire* first surfaced in *Firepower*: 'The concepts are very similar. We wanted to keep the look and the feel the same but add 3D and a new interface as well as new strategies. As you have all these different vehicles, there's a lot of strategies you can pull. You have to know which vehicle you need at that time.' The subtle differences between the abilities of the vehicles certainly give *Return Fire* considerable depth.

Graphically, *Return Fire* is outstanding. In both fullscreen and splitscreen mode, Silent's attention to detail has resulted in a compelling gameworld. Blow up a building and tiny figures run out of the ruins. Chase them and they run away, even diving into the sea to escape. Trap them in a corner and they turn on you and start throwing grenades. Every object, even the tiny figures, is fully light-sourced, with individual shadowing, and the buildings explode in a brilliant white flash which contracts to a red fireball.

The buildings and landscapes were created using a combination of polygons and bitmapped graphics. Will and Alex are reluctant to give much away, but they do say that there are 'hundreds of thousands of polygons onscreen at once'.

Your viewpoint changes according to what you're doing. 'The camera zooms into the action and zooms out when you're travelling,' explains Alex. 'We want to make it as cinematic and movielike as possible.' Also helping to create a filmic atmosphere is a multi-layered Dolby Surround soundtrack comprising both effects and music, including classical pieces like Wagner's Ride Of The Valkyries.

Alex is convinced that *Return Fire* will keep 3DO owners playing for months. With its delightful graphics, compulsive gameplay and wonderful twoplayer mode, it deserves great success. The full review will follow next month. E

Credits

Director: Baron Reichart Kurt Von Wolfshield
Audio/associate producer: Alex Kasperavicius
Senior Programmer: William Ware
Programmer: Edgar Tolentino
Programmer: James Host
Artist: Van Arno
Layout: David Pascal

Donkey Kong Country

Edge lays its hands on Nintendo's most important release since the last *Mario* game and finds it a mixed blessing

Format:	**SNES**
Publisher:	**Nintendo**
Developer:	**Rare**
Release date:	**Nov 26 (Jap)**
	Dec 2 (UK)
Origin:	**UK**



The flipside of *Donkey Kong Country*'s revolutionary graphics is some distinctly conservative gameplay



All of *DKC*'s 100 worlds are entered via a map – just like *Super Mario World*, in fact



The obvious lure of *DKC* is its graphics – the product of Rare's immense SGI network. The gameplay appears to be rather less innovative, though

For Nintendo watchers, *Donkey Kong Country* provides a perfect illustration of the company's Janus-like attitude on the eve of the next-generation upheaval. On the one hand, it is anxious to preserve its heritage and maintain some sort of link with the past. The result is that Donkey Kong is still being offered starring roles in videogames at the ripe old age of 11. On the other, it is keen to flaunt its credentials as one of the major players in the upcoming hardware battle: the story that Rare discovered the techniques used for *DKC* while developing Ultra 64 games has now become part of the game's mythology and is being heavily emphasised in its marketing campaign. In the words of Nintendo's press release, *Donkey Kong Country* 'brings 64bit gaming ever closer.' Or, 'the future's nearly here but, hey, don't stop buying the present just yet'.



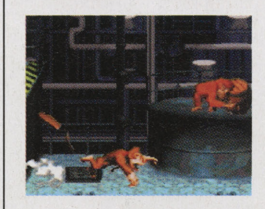
Indiana Jones And The Temple of Doom meets Donkey Kong. Donkey and Diddy screech along in a runaway mine cart, *Super Adventure Island* style. But will *Donkey Kong Country* keep Nintendo on the rails?



DKC features a 'half-life' mechanism that is a straight port from the *Mario* games: Diddy Kong plays Mario to Donkey Kong's Super Mario

The old jumping-on-enemies routine is still in evidence. You could almost put the little fellow in dungarees...





These new screenshots of the finished game highlight *Donkey Kong Country*'s appeal. Visually it's a majestic achievement. The backgrounds and visual effects, like the blizzard and the subdued lighting of the crystal cave, are spectacular – so much so that they often upstage the foreground action.

Unfortunately, **Edge** found that the flipside of these revolutionary graphics is some distinctly conservative gameplay. Not only does *DKC* draw from the well-established *Mario* character pool but it boasts virtually the same play mechanics that *Mario* pioneered on the NES. Donkey Kong picks things up, throws them, goes for the odd swim, rides animals and, yes, travels on moving platforms. There are also secret levels, things inside crates and puzzles to solve.

Whether this is the product of a lack of ideas or an active 'if it ain't broken, don't fix it' policy, Nintendo will be banking on that old *Mario* magic working again this Christmas. *Donkey Kong Country* may look a great leap into the future but its feet are planted safely in the tried and tested past.





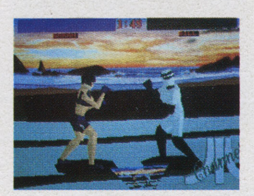
Donkey Kong rides through a level on Rambi the rhino (Yoshi?). Some of the lighting effects in the underground levels (inset) are gorgeous

Credits

Lead programmer: C Sutherland
Programmer: B Gunn
Programmer: M Wilson
Additional software: C Stamper
Additional software: C Tilston
Additional software: C McLean
Additional software: O Norton
Characters: S Mayles
Characters: K Bayliss
Objects: M Stevenson
Backgrounds: A Smith
Graphics manipulation: C Peil
Additional graphics: N Crook
Music/sound: D Wise
Music/sound: E Fischer
Music/sound: R Beanland
Game design: G Mayles
Director: T Stamper

Fight for life

Atari will be hoping that the Jaguar's first polygon beat 'em up achieves the same level of expectation as Saturn *Virtua Fighter*



The camera pans round the fighters and a record/playback facility allows action replays

Format:	**Jaguar**
Publisher:	**Atari**
Developer:	**François-Yves Bertrand**
Release:	**December (US)**
Origin:	**US**

After the disappointing *Alien Vs Predator*, Jaguar owners will be pinning their hopes on *Fight For Life*, a beat 'em up clearly inspired by Sega's *Virtua Fighter* arcade machine. There's actually a specific connection between the two games: the main programmer of *Fight For Life*, François-Yves Bertrand, worked for a year and a half at Sega's AM2 arcade division before defecting to Atari.

These pictures are from an early working version of the game with 900 polygons onscreen; 1,200 polygons at 20fps are promised in the finished version. In comparison, the *Virtua Fighter* coin-op boasts between 1,500 and 2,000 per fighter and the Saturn conversion will have almost 2,000 in total. *Fight For Life* employs the same expedient as Saturn *Virtua Fighter* to get around its relative lack of polygons: texture mapping. About 20% of the polygons will be textured to provide details like tattoos, logos and some facial features.

Fight For Life is set in hell, with the characters supposedly fighting for the chance to live again. There are eight fighters in total: a ninja, a docker, an American GI, an Amazon, a boxer (M.Bison/Balrog style), a Tuareg tribesman, a 'golden girl' and the son of the devil. The four backdrops are Chicago at night, a beach and two mountain scenes.

A couple of features are at least original. Firstly, you can 'record' each fight and play it back afterwards. Also, your fighter begins with only a few moves and 'learns' those of his defeated opponents. This gives each contender up to five special attacks.

If *Fight For Life* can succeed in doing a passable impression of *Virtua Fighter*, or even improve on it, then it should go some way to rescue the Jaguar's flagging reputation.

Your fighter begins with only a few moves and 'learns' those of his defeated opponents. This gives each contender up to five special attacks





The large characters are still awaiting the final touches (top). The skyline background looks impressive (middle). The moves are well animated (bottom)

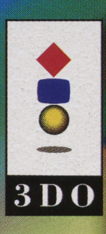


Total Eclipse
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WITHOUT CRYSTAL DYNAMICS...

...3DO IS JUST AN EXPENSIVE TOY.





Toshinden

(Tales Of The Gods Of Combat)

3D fighting games are becoming the new benchmark for console performance. Takara's polygon-fest looks like a prime contender

***Toshinden* contains some of the smoothest polygons yet seen and provides further proof of the PlayStation's power**

Format:	**PlayStation**
Publisher:	**Takara**
Developer:	**In-house**
Release date:	**TBA**
Origin:	**Japan**

The hugely successful run of *Virtua Fighter* (in Japan at least) has galvanised beat 'em up specialist Takara into action with a PlayStation release that recently impressed Japanese journalists (joined by **Edge**) attending a special presentation at the headquarters of Sony Computer Entertainment.

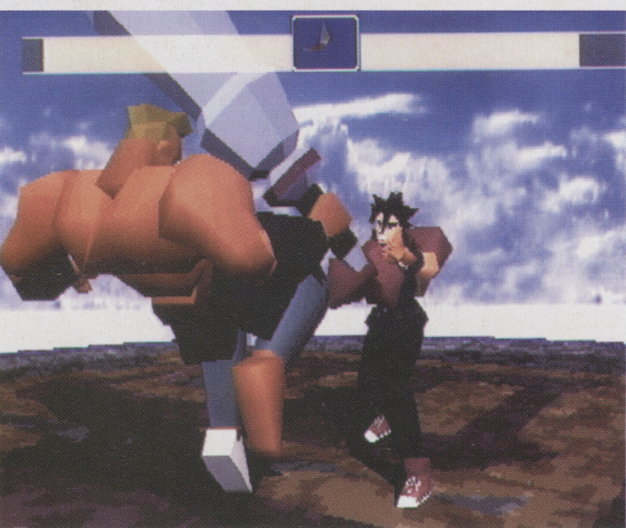
Most noted for its conversions of SNK games to the SNES and Mega Drive, Takara has now decided that it has the muscle to go it alone and release an unlicensed game. The result is the one-on-one PlayStation beat 'em up *Toshinden* (the title translates, rather clumsily, as *Tales Of The Gods Of Combat*). A hybrid of *Virtua Fighter* and *Samurai Shodown*, *Toshinden* contains some of the smoothest polygons yet seen, and provides further proof of the PlayStation's power.

Toshinden's greatest asset – a zooming camera that pans smoothly across the eight different backgrounds – is complemented by a range of superb Gouraud-shaded characters, complete with detailed clothing and even different facial expressions and hairstyles.

Takara's expertise with original ideas is untested, but *Toshinden* looks like a good starting point.

All the characters fight with weapons. Here Sofia gives the sword-bearing Kain a whipping







The speed and animation exhibited in this sequence of moves is amazing. *Virtua Fighter*, *Tekken* and *Fight For Life* had all better be on their guard

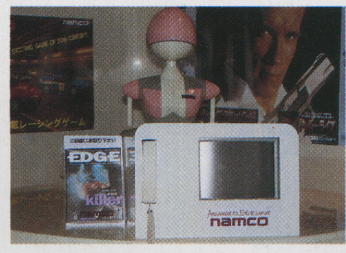


LAP TIME
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LAP TIME
KING7
RECORD
1' 00"000
TOTAL
0' 24"933
namco

Namco

Namco's console software development has traditionally slipstreamed its arcade technology. Now the company's support for the Sony PlayStation looks set to reverse the situation





Namco's Tokyo headquarters in Yaguchi, Ota-ku (left) features an information robot (right) that points visitors in the right direction

Namco is destined to be a prolific source of software for Sony's PlayStation. A deal signed with Sony allows the coin-op specialist to produce product for the home machine as well as develop arcade machines using the PlayStation technology.

With Sony's machine now entering the home straight, **Edge** visited Namco's HQ in Yaguchi, Ota-ku (20 minutes from downtown Tokyo) for a meeting with the R&D lab responsible for *Ridge Racer* and other PlayStation titles, and spent several hours quizzing five key staff (two of whom – **Youchi Haraguchi** and **Noby Kasahara** – were also interviewed in **Edge** 8).

When Edge was last at Namco, the conversion of *Ridge Racer* was still deep in the planning stages. Six months later, there are just a few weeks to go before the game is scheduled to be finished.

'We've spent 80% of the necessary development time,' reveals **Shigeru Yokohama**, general manager of the CG development department. 'The project manager keeps telling us it's not enough,' he adds, laughing.

Six months to convert a sophisticated arcade game to a brand-new system using embryonic development hardware is a formidable task. Namco has a core team of seven programmers and graphic artists working on *Ridge Racer* but is also relying on a number of planning staff to complete the project. Since shots of the 50%-complete version appeared in last month's **Edge**, some progress has been made.

'It's difficult to estimate just how complete the game is in percentage terms,' shrugs Shigeru. 'All aspects of the gameplay have been done and the graphics are now 70% complete. There are still small details to go in, like the girls at the beginning of the race – they've still to be designed – but most things are finished.'

Although characteristically wary of giving away too much technical information about the conversion process – and the PlayStation's ability to replicate the coin-op – the *Ridge Racer* team were prepared to reveal some general details about the problems they encountered.

'The specifications of the two systems are entirely different,' states Shigeru. 'System 22 is used in the arcade version, and the PlayStation gives us less power to play with. The number of polygons onscreen caused us some problems, as did the PlayStation's CPU. There's also no anti-aliasing in the home version. We spent a lot of time refining the program on the PlayStation. As a result, it has ended up a lot bigger than the program code in the coin-op.'

Judging from the pictures on these pages, the programmers (who, unlike Sega's *Daytona* team, are not part of the arcade division) are experiencing some difficulties achieving the arcade version's level of detail. But the preliminary results are extremely impressive considering that they represent just six months' work. And what really matters is that the game looks fantastic in motion. Just as **Edge** was going to press, it attended an electronics show



'All aspects of the gameplay have been done and the graphics are now 70% complete. There are still more details to go in, but most things are finished'

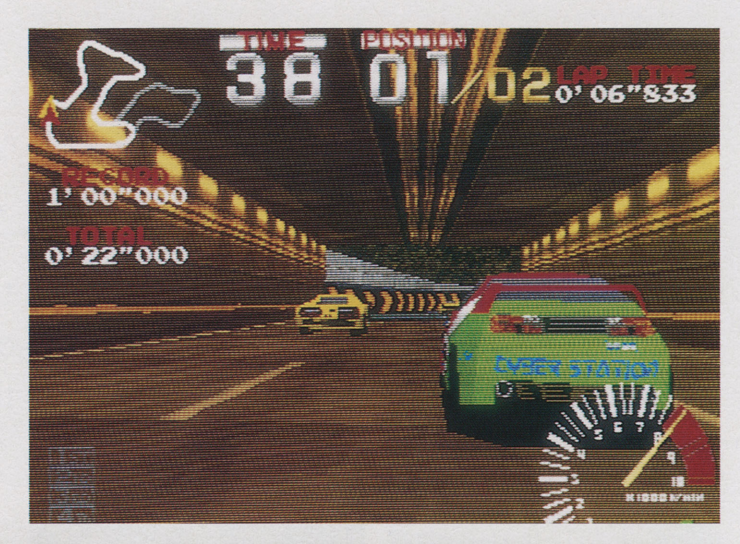
Shigeru Yokohama, general manager, CG development

Continued next page

where a demo of the game was playing and can testify that these screenshots fail to do justice to the quality of the action.

As indicated in **Edge** 14, PlayStation *Ridge Racer* will include extra features not found in the coin-op. One improvement will be the addition of two different viewpoints, giving the player a total choice of three – this will no doubt be welcomed by *Virtua Racing* devotees. A selection of 12 cars will also be incorporated in the console version.

All the standard arcade options will be retained, including automatic transmission, the time





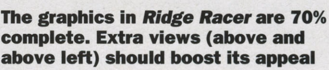
trial route and the ability to travel the opposite way around the circuit. The soundtracks in the game have been ported straight over onto the PlayStation sound hardware, and Namco is currently designing a steering accessory for the console to mimic the arcade experience as faithfully as possible.

One issue which has been discussed at length at Namco is the PlayStation's link-up capacity. It has now been confirmed that a link-up facility won't make it into *Ridge Racer*. According to Mr Yokohama, 'Sony is a little bit behind on this particular aspect of development. We haven't seen the machine's link-up capabilities working yet, and we've no information about it. For this version of *Ridge Racer*, it won't be possible to play linked up.' This is a shame, but it's one deficiency that Namco will surely address with a new release of the game (and is likely to remedy in a conversion of *Ridge Racer 2*).

Namco is still committed to releasing *Ridge Racer* to coincide with the arrival of the PlayStation. 'The exact launch date is still not confirmed,' section chief Noby Kasahara points out, 'so its hard to say when the game will be released.' Presumably, there won't be too much sleep lost by the team in the unlikely event of the launch slipping to late December.

News that Namco will be pricing *Ridge Racer* at around ¥6,000 (£35) is very encouraging, given that a current wave of SFC software is hovering just under the ¥10,000 (£60) mark. Consumer sales manager Youchi Haraguchi explains that this is a direct result of Sony's lower licensing and manufacturing fees: 'With Nintendo, the higher-memory ROM boards cost between ¥2,500 (£16) and ¥3,000 (£19). With Sony, the cost of a single game CD is closer to ¥1,000 (£6), so we can take the same percentage profit on each unit but sell the game at a much lower price.'

No other versions of *Ridge Racer* are planned by Namco, although it's known that the company has a contract with Sega


The graphics in *Ridge Racer* are 70% complete. Extra views (above and above left) should boost its appeal



Note the 'Rave War' legend on the car – a clever bit of marketing for Namco's upcoming game


Noby Kasahara, Namco's section chief of international sales



One of the most impressive parts of the arcade game: the bridge section. The detail on the cliffs in the PlayStation version is faithful to the original

for Saturn development (3DO software was on the cards but now looks dubious). 'We know the PlayStation well now and it's good hardware,' explains Shigeru. 'But we don't know the exact specifications of the Saturn yet, so it's difficult to say whether the game could be translated or not. Other new machines like the 3DO and 32X simply aren't powerful enough to do justice to the game.'

To the inevitable chagrin of the millions of loyal Japanese Super Famicom owners, the chances of a 16bit version appearing rate at about zero.

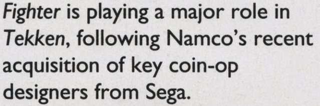
Another major

project currently being worked on at Namco is *Tekken*. Running on the new System 11 board co-developed by Namco and SCE. System, this beat 'em up is one of the most significant developments at Namco – System 11 is essentially a PlayStation chipset optimised for the arcade.

'It's not exactly the same hardware as the home system, admits Shigeru, 'but it's based on the same system, rather like the Titan board is based on the Saturn. Because the game has been written on the PlayStation, no conversion will be necessary – it can be ported straight over.'

It's thought that one of the original AM2 designers of *Virtua Fighter* is playing a major role in *Tekken*, following Namco's recent acquisition of key coin-op designers from Sega.

With texture-mapped polygon fighters à la *VF2* and exceptionally fluid movement,





'With Sony, we can take the same percentage profit on each unit but sell the game at a much lower price'

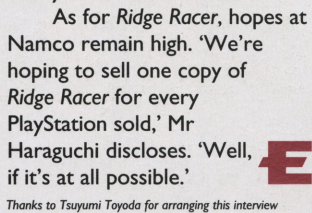
Youchi Haraguchi, consumer sales manager

Tekken wowed the crowds at the recent JAMMA show. No pictures have yet been released and Namco officials did their best to prevent photographs being taken, but *Tekken* is expected to appear sometime next year.

Cyber Sled, another PlayStation conversion in the works at Namco, is just 'one month behind *Ridge Racer*'; it and *Starblade* are scheduled for release in December and January respectively. 'We'd like to be able to release one game a month for the system,' states Youchi.

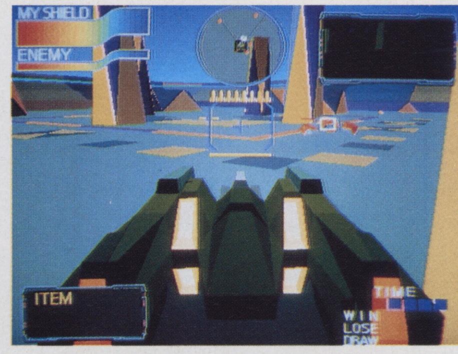
As for *Ridge Racer*, hopes at Namco remain high. 'We're hoping to sell one copy of *Ridge Racer* for every PlayStation sold,' Mr Haraguchi discloses. 'Well, if it's at all possible.'

Thanks to Tsuyumi Toyoda for arranging this interview

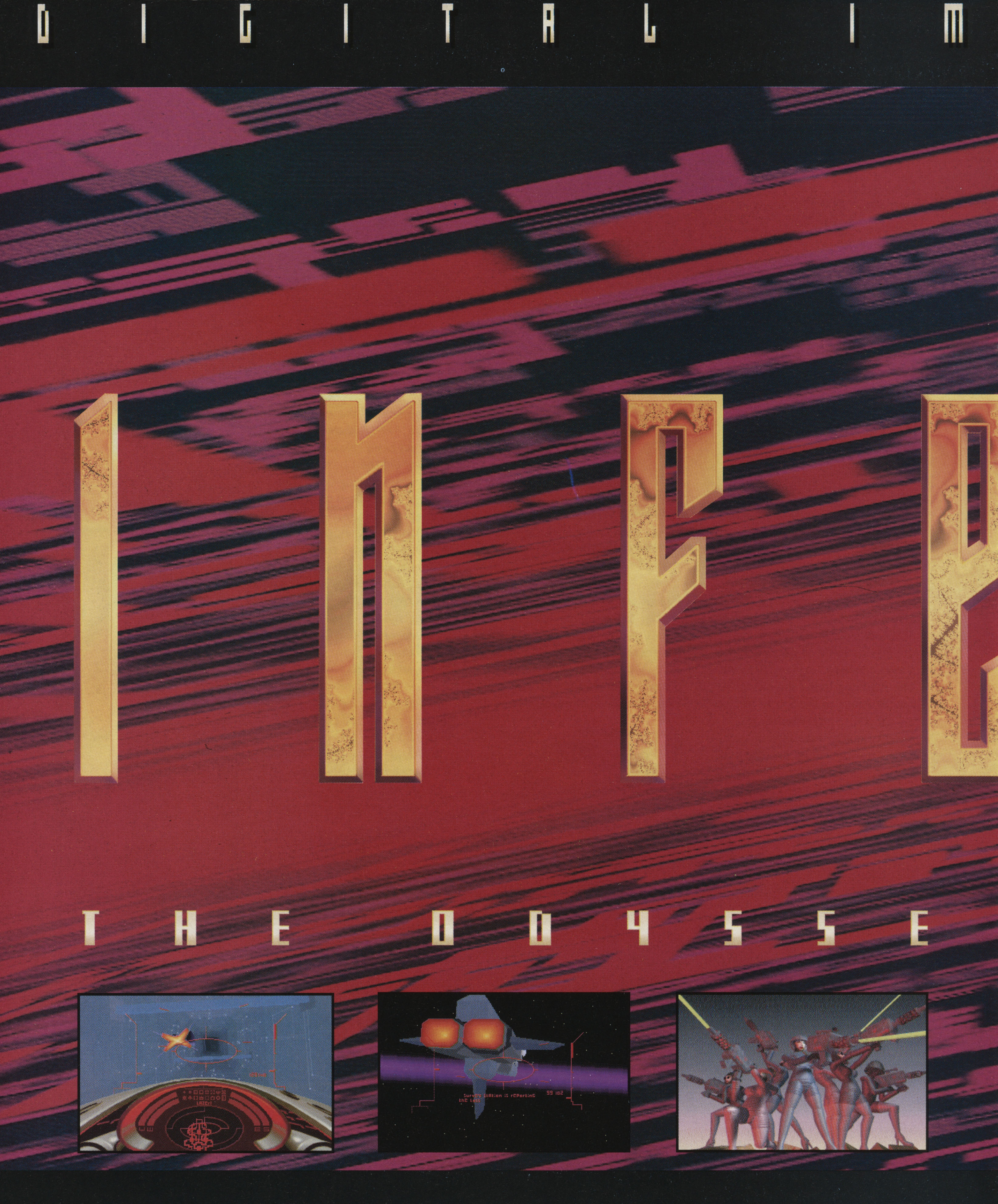








Namco's other PlayStation projects include *Cyber Sled* (above right) and *Tekken* (characters, top), a superb texture-mapped *Virtua Fighter*-style beat 'em up debuting on the PlayStation coin-op hardware. New arcade arrival *Ace Driver* (above left) is another likely candidate for conversion



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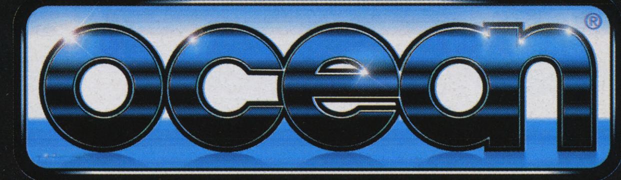
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Making tracks



The noble **art** of game music



For many years, videogames have relied on music to add atmosphere. Edge explores the history of game music, from the first primitive beeps and squeaks to the sophistication of CD digital audio and new custom hardware

Graphics tend to get all the glory in videogames. Game music is either disregarded completely or dismissed as irrelevant; how can it compete with Gouraud-shaded polygons and realtime rendering? But, as Gremlin's **Patrick Phelan** puts it, 'Music is an essential part of any computer game. Without it the game appears flat and without dimension.' And technological advances in the field of game music have been just as dramatic as those in the visual domain. Now, with the CD age upon us, music in videogames is set to change beyond all recognition.

In the beginning was the Spectrum. The redoubtable 8bit machine simply had a speaker that you could turn on and off. When the C64 appeared it was considered a great technical advance because its specially designed Sound Interface Device (SID) gave the musician three synthesised waveform voices (channels) to work with. Music was written either on a PC or straight into the machine itself in source code, with the notes, their length and their volume typed in manually.

It was as much a technical exercise as a musical one. Veteran game-music maestro **Tim Follin** recalls, 'The music was secondary to the fact that you were making a sound that was original and trying not to make it sound completely crap.'

But for all its limitations, many musicians regard the era when they had to drive the C64's three-voice chip as the golden age of computer music. The music (described by one composer as 'plinky-planky') was rudimentary, but there was a real sense of challenge involved. Writing the melody wasn't enough; you also had to write a sound driver routine to control the SID that would fit into the memory available – normally 3-5K.

'It was incredibly difficult,' remembers *Chaos Engine* composer **Richard Joseph**. 'We were doing it in source code all the time so you'd have to put a tune in and go make a cup of tea while it assembled. But it made it all very exciting. It was very limiting, but at the same time you could be very inventive if you put the time in.'

Charles Deenan, who started writing music straight into the C64 as one half of Maniacs Of Noise – responsible for over 300 C64 and Amiga titles – agrees: 'Some people writing now think they're really good with music, but they have all the synths and other things within their reach. With the C64 you only had three voices to work with and you really had to know what you were doing to make things sound good.' Many composers likened the SID to a musical instrument in its own right; you had to put the same time and the energy into learning how to 'play' it as you would with a piano or a guitar.

Theoretically, you could only ever get three notes at a time on the SID, but ways were soon found to push the chip beyond that spec. One of the common tricks was to assign short, arpeggiated notes to one voice and trigger them for 1/30th of a second, thereby fooling the human ear into thinking it was hearing more than one note simultaneously. And there were many other techniques. Sampled sound didn't really come into its own until the development of the Amiga's four-voice, 8bit soundchip (though a handful of C64 games like Deenan's *Turbo Outrun* actually managed to use it), so sampling chords to save voice polyphony was, strictly speaking,

Continued next page





out of bounds. What was possible, though, was realtime waveform shaping on the SID's square-wave voice (which, according to Deenan, gives the sound more animation) or filling empty spaces between notes with echoes from other voices.

The plink-plank of a labouring C64 soundchip is still enough to bring a tear to many a time-served game composer's eye. Mindscape's **Mark Knight**, who wrote the music to *Liberation*, admits: 'I've got a program on the Amiga and the PC which emulates the C64 soundchip and I come in and think, "Shall I put a CD on? Nah, I'll listen to some Rob Hubbard".'

When the Amiga arrived, the strictures imposed by the SID were suddenly blown away. Music was able to expand into vast areas of memory (Mark Knight guesstimates that *Liberation*'s music on the standard Amiga occupies 400K), with the only limitations being the desire of developers to release games on a single floppy. The Amiga also heralded the advent of sampling in game music, which meant that most composers moved on to using MIDI equipment.

'I personally still think that the Amiga is the most capable in the music department,' says **Andrew Barnabas**, who has created soundtracks for *Global Gladiators*, *Aladdin* and *SWIV*, among others. 'The music I've heard created on it seems to contain a certain discernable quality not found on the other platforms.' Maybe that's why the CD32 is still using basically the same chipset a good number of years after its introduction. Despite only having four channels, one of which was usually saved for SFX, the Amiga's sound processor was certainly the most successful of the 'middle generation' of soundchips.

The Amiga's console contemporaries are accorded rather less respect by musicians. The Mega Drive in particular, which relies on a 10-channel chip largely dependant on FM (Frequency Modulation), gets short shrift. 'Basically, the C64 sounded better,' sniffs Barnabas. 'Yuck' is Knight's opinion.

Knight's comment on the SNES soundchip is equally verbose. 'I don't like to talk about it,' he says. However, there are many people who would argue in favour of the SNES's Sony-designed sound processor. An eight-voice chip offering 16bit data-compressed sample playback, it has the potential for spectacular performance. But its problem is memory. The SNES only has 64K set aside for music and SFX – generous compared to the C64, but stingy in the extreme compared to the Amiga.

'Say I had to do a conversion of *The Chaos Engine* for the SNES,' says Richard Joseph. 'On the Amiga, every level had 250K. You have to squeeze that down into the SNES, which, okay, is a compressed 64K, but it's still only the equivalent of 100K.' Charles Deenan circumvented that problem by putting the note data and drivers in the normal 512K and restricting samples to the 64K, but most people didn't. Also, the BRR conversions from 16bit to 4bit samples were decompressed in realtime, which led to a noticeable reduction in quality.

'I still think the Amiga is the most capable in the music department. The music I've heard on it seems to contain a discernable quality not found on the other platforms'

Andrew Barnabas

Now the PlayStation and Saturn are looming. The Saturn contains a Yamaha-designed 16bit, 32-channel soundchip that is capable of emulating a conventional synthesiser costing £1,000. The PlayStation supports a 24-voice ADPCM chip sampling at 44.1Hz (the industry standard for CD digital audio). Add to that the fact that both those machines, like most of the other CD platforms, all support Red Book digital audio and you've got sound potential as far removed from the C64's audio capabilities as texture-mapped polygons moving in realtime are from four-colour sprites.

If the introduction of the Amiga soundchip revolutionised game music, the advent of Red Book CD digital audio capability in the games industry is turning it upside-down. Composers are no longer limited to having to drive soundchips; no longer must they restrict compositions to a certain number of channels. With CDDA, they can treat game music in the same way as any other type of music.

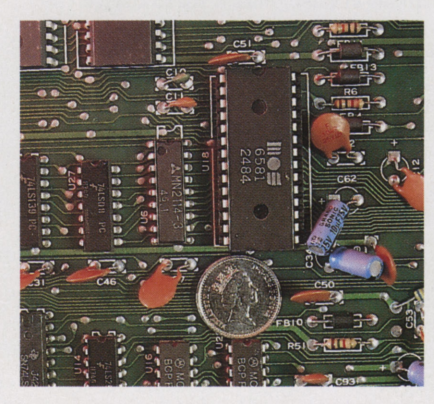
But CDDA is creating its own problems. The overriding issue is quality. The average consumer knows what a CD sounds like and has become used to a certain standard; anything that falls below that standard is going to be immediately pounced upon as inferior. TripMedia were near the completion of their *Burn:Cycle* project when they realised that the sound just wasn't up to it. Fine for conventional game platforms, perhaps, but not good enough for CD-based systems that are likely to be routed through the buyer's hi-fi. The result was a lot of rerecording and remixing.

And that kind of thing is expensive. A small MIDI pre-production suite alone costs around £30,000, but now MIDI simply isn't enough. As **Jason Clift** from game music specialists Sonic Seduction points out: 'If you want CD-quality music in games, you have to treat it the same way as any other music you'd produce for a CD.' This basically means having access to a recording studio, something that gamehouses are unlikely to provide the capital for themselves. To achieve true CDDA, each channel needs to be separated, then treated and equalised individually. Hence, much of the final work on CD soundtracks nowadays gets farmed out for final mixing to companies like Sonic Seduction, who use studios containing £1 million's worth of equipment.

But, as Mark Knight points out, money is not the only thing at issue: 'I'd like to

Commodore 64

Given that the Commodore 64 first appeared at the end of 1982, its sound capabilities were truly remarkable. The revolutionary SID (Sound Interface Device) chip provided three channels of synthesised voices, with each voice transmitted in one of four types of waveform. The SID also had the benefit of programmable attack, delay, sustain and release (ADSR) parameters. During the course of its commercial life, the Commodore 64 arguably acquired a larger library of classic game soundtracks than any other machine.





convince Mindscape to get the equipment for me but then you still need the experience. You can sit somebody in front of hundreds of thousands of pounds of equipment, but unless they really know what they're doing they're not going to turn out brilliant results.'

Then there's the question of memory. Even with compression routines, there's a finite amount of storage space on a CD. Though it might seem ridiculously large compared to the capacity of older platforms, it must be remembered that CDDA takes up a lot more memory than a sound driver routine – one minute of 16bit stereo at 44.1Hz eats up 11Mb.

Another obstacle is that the bandwidth of the CD is often taken up by the game's visuals. Graphics are the big selling point in games, and although it may be a simple accomplishment to trigger direct music playback off the CD, other data normally has priority. Charles Deenan has been forced to write chip music for Interplay's upcoming *Stonekeep* for the PC because the CD is constantly in use loading graphics into the machine in realtime. 'You're lucky to have CD-based soundtracks now,' says Mark Knight. 'Games are getting so complex that they need the CD for all the data, graphics or code they're trying to pull off them.'

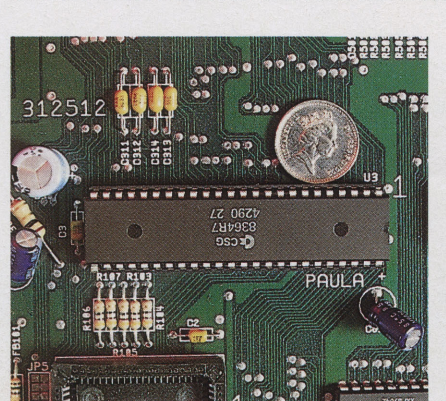
Hence the revved-up tech specs of the next generation of soundchips. The hardware manufacturers are obviously pushing for them to be used, but the composers themselves are less sure. The majority of them are passionately committed to CDDA. 'Most of the time we'll probably choose to do CD audio,' confirms Charles Deenan, 'just so we don't have to spend another two or three months redoing the music for another platform.' Currently, Deenan's favourite platform to work on is the 3DO, simply because the double-speed drive means that audio can be streamed off the CD most of the time. However, anything CD-based meets with his approval, because 'all the other things are getting to be a pain in the arse.' Richard Joseph is firmly in the same camp: 'I think everybody's looking forward to CDDA, to be honest, although we won't know how practical it will be until people start working on it.'

> **'What we're doing now is CD, and if it goes backwards from that I'd rather leave the industry. I'd rather hear recorded music played at 20KHz than computer music'**
> Tim Follin

Tim Follin expresses his preference more forcefully. 'Basically, what we're doing now is CD, and if it goes backwards from that I'd rather leave the industry. It doesn't matter when the alternative is to do computer music. I'd rather hear recorded music played at 20KHz than computer music. The whole idea of computer music was a silly one to begin with. These soundchips were invented for sound effect accompaniment to a game, that's all it was. It's a bit of a waste of time if you're doing music that's going to be covered by sound effects in some poxy little game.'

A major reason for the attraction of CDDA for game composers is that computer music, despite the advances in soundchip design, is perceived as being not what it used to be. The technology has certainly enhanced the music, but the extensive use of MIDI and sampling is

Continued next page



Commodore Amiga

The custom sound chip inside the Amiga is one of the most impressive features of the computer's original PAD architecture. The 'Paula' chip (as it was nicknamed by Commodore) has direct memory access and delivers four channels (two stereo pairs) of 8bit PCM, with nine octaves of amplitude and frequency modulation. But by far the best feature is its ability to play sampled voices and instruments at different pitches, with impressive results. The Amiga's library includes some of the best game soundtracks ever written.



Tim Follin, composer and programmer of a myriad of game soundtracks, is one of the industry's greatest talents

Tim Follin

Although only 24, Tim Follin has carved himself an enviable position in the videogame industry. An accomplished player of the guitar, piano and violin, his career started with freelance work in the mid-'80s. This was followed by a job with Software Creations, which then occupied a cramped office above a computer shop in central Manchester.

At the time, the company was porting a range of Capcom coin-ops to home computer formats. Tim created a range of truly outstanding soundtracks for its conversions of games such as *Bionic Commandos, LED Storm* and *Ghouls 'n' Ghosts* (arguably his finest hour, putting Capcom's SNES tunes to shame) for computers including the Spectrum, C64 and, later, Amiga.

Tim stayed with Software Creations until about a year ago, having composed and programmed acclaimed soundtracks for *Solstice* (NES), *Target Renegade* (NES) *Spider-Man And The X-Men (SNES), Equinox* (SNES) – notable for its ethereal, haunting music – and the fabulously upbeat *Plok!* (SNES) He later found time to create a range of widely regarded rock tunes for Interplay's *Rock 'n' Roll Racing*, also on the SNES.

Tim currently works for Malibu Interactive in Warrington, producing audio CD soundtracks for the Mega CD. 'I never want to write chip-generated music again if I can help it,' he says with feeling. 'To be honest, I really don't see my future in the games industry – I want to get into making films.'

Fans of his music will be hoping he changes his mind. If he achieves his aim, the videogames industry will lose one of its greatest talents. E



Continued

widely regarded as masking a lack of musical talent. 'Samples make things sound absolutely brilliant, even if hardly any work was put towards it in the first place,' says Barnabas. It's a rather Luddite attitude in many respects – similar to the purist revisionism that the music industry went through at the dawn of techno – but one which acknowledges a significant factor in the decline of computer music as an artform – the feeling now is that 'anyone can do it'.

'It's all about money these days. If music for a game would take three months, the developers will say, "Let's find someone else". And that's kind of pissing me off'
Charles Deenan

The widespread use of, and, to an extent, reliance on, MIDI and sampling became necessary as companies released more games on more platforms. The result was that music simply became the finishing touch on an incredibly fast production line. Admittedly, some of the early composers like Hubbard could churn out great music at a spectacular rate of knots, but production lines aren't actually renowned as being conducive to creativity and individuality. 'It's all a matter of money these days,' opines Deenan. 'If music for a game would take three months, the developers will say, "Let's find someone else", even if that person was really good. And that's kind of pissing me off.'

This situation has understandably resulted in a great deal of cynicism among game composers, disenchanted with game music being regarded as a 'bolt-on extra at the end', in the words of Sonic Seduction's **Dan Parker**. Many composers never even see the game they're writing for until it's close to completion. Andrew Barnabas relates a story of just being handed a list of titles for tunes for a table on *Pinball Dreams II*, a copy of the first game and nothing else. 'I couldn't even see what the game looked like,' he complains. 'It was like composing in the dark.'

CDDA is seen by composers as the catalyst to improve their professional circumstances. Things are changing already, as software houses commit themselves to larger projects and release fewer games. Often the musician is still only bought in during the final stages, but some are now being consulted from the start.

Budgets are rising too, as it's realised that music is actually an integral part of games. Even for games destined for more conventional media, film composers are starting to be commissioned, or the inhouse one is starting to emulate that cinematic style more closely. Sound is finally gaining the status it should have had from the start. 'Music is a fundamental part of the very essence and atmosphere of the game,' asserts Dan Parker. 'Now that there's much more capability there, the whole position of music will change.'

Game composers now have the opportunity to produce music that is indistinguishable from that in films. The complexity and the potential of the new technology at their disposal is enormous; no longer are they constrained by the abilities of a particular soundchip. But technology is only one half of the equation; creativity is equally, if not more, important. And, sound quality aside, will game music really be any better in the CD age than it was on the C64?



Charles Deenan is audio director at Interplay US, but he started writing game music with Maniacs Of Noise

Charles Deenan, Interplay

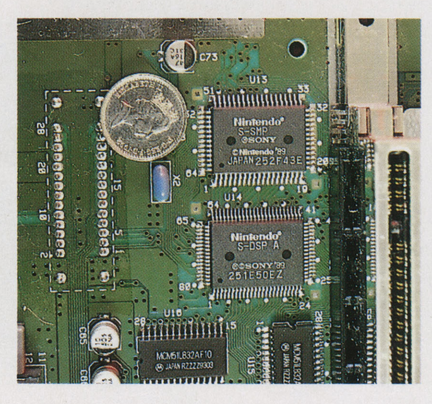
Back in 1986, a Dutch duo called Maniacs Of Noise set up a company to create music and effects for the Commodore 64. Co-director Charles Deenan was just 16 when he decided to team up with friend and musician Jeroen Tel, and the pair went on to create some of the most memorable soundtracks heard on the C64 and Amiga.

'It kind of started as a joke,' recalls Charles. 'Essentially, I was a programmer doing drivers and sound effects at first. After the first few games, for which Jeroen did the music, I tried to do some music as well. I'd have to say that the first few attempts were pretty horrific.' Hewson obviously didn't think so; the publisher of accomplished 8bit games like *Stormlord I & II*, *Cybernoid I & II* and *Zamzara*, which pushed the C64's sound chip to its limits, made much use of the Maniacs' talents. Companies like Probe Dinamic, Digital Design and System 3 also employed the Maniacs for many of their games, and by the time they had progressed to the Amiga in the early '90s they had written music for more than 300 computer games.

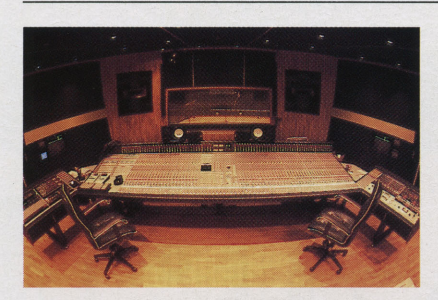
Charles moved to the US in 1991 to join Interplay, and he now heads their seven-strong audio department in Irvine, California. Among the games he's created music for are *Out Of This World*, *The Lost Vikings*, *Castles II* and the very long-awaited *Stonekeep* (**Edge** 1). 'It's kinda funny to see where game production has gone during the last four years,' he reflects. 'My main tools used to be a C64 and a copy of *Turbo-assembler*. Now we're using studios with about $200,000 worth of audio equipment.'

SNES

Anyone who's ever heard SNES classics like *Castlevania IV* and *Equinox* won't be surprised to learn that the machine has some powerful sound hardware. Its Sony-designed 16bit sound chip delivers eight channels of stereo PCM (pulse code modulation) and offers an adjustable sampling rate of between 6 and 48KHz. The chip also has hardware-assisted effects like digital echo, although *Equinox* is one game that uses echo effects created in software to save memory – the SNES's 64K sound RAM is its biggest drawback.



For the record



Nomis Studios, as used by Sonic Seduction (Paul Weller recorded Wild Wood here)

As far as sound reproduction is concerned, there's no argument about the fact that CDDA is superior to chip-generated music. New games hardware may have multiple voices, but compared to a CDDA track produced, say, in the 64-track Nomis Studios used by Sonic Seduction, it's lightweight.

Sound drivers contain basic information on what instruments should be used, what note is to be played, for how long and at what volume. A recording studio, however, splits the soundtrack into its component parts and assigns each one a separate channel on a mixing desk, through which it can be individually treated and controlled, before the music is mixed back down to two-track stereo.

The important thing is to ensure that instruments with similar frequency ranges don't clash in the same sonic space. Every channel on the mixing desk has a fader and equaliser: the fader controls the volume, while the equaliser governs the level of any chosen frequency. For example, a bass drum and a bass guitar occupy similar frequencies, so the sound engineer can decide to cut the bottom end and boost the top end of one of the instruments and do the reverse with the other. He must set the volume, the equalisation and the position of that sound in the stereo span before it can be recorded to tape.

MIDI is far less adaptable; keyboards often only have a stereo output so sounds can't be separated.

Sonic Seduction can be contacted on 081-830 6263. Fax: 0273 400455

Banding together



Alien Sex Fiend were responsible for the ambient soundtrack heard in *Inferno*

The big trend in game music at the moment is to rock bands. *Inferno* comes courtesy of a soundtrack by Alien Sex Fiend; Acclaim's *Maximum Carnage* features Green Jelly; *Microcosm* has Rick Wakeman; and EA's 3DO *Road Rash* thrashes along to music from Therapy? and Soundgarden, among others.

Although such manoeuvres provide a nice opportunity for reciprocal promotion, the logic of depending on narrowly defined musical genres is questionable. A soundtrack pivoting around alternative metal might increase sales to that sector of the market but is just as likely to alienate other, much larger, sectors.

Another problem is money. In a recent issue of Making Music magazine, Renegade's **Graham Boxhall** stated: 'We get a lot of interest from bands but they misunderstand the commercial aspects. We've had approaches from well-known bands like Utah Saints and The Shamen, but it wouldn't be profitable for us.'

The potential for multimedia abuse of copyright is enormous. **Mark Isherwood**, general licensing controller of the Mechanical Copyright Protection Society, which distributes royalties to artists, has warned that reducing the royalty rate for CD-ROM music from the audio one (8.5%) could lead to a 'longterm erosion of income' for musicians. After two years of negotiations, the MCPS still has 'major problems to overcome' before it can realise its aim of introducing a court-enforceable Standard Licensing Scheme.

Rock music in videogames is still a novelty. Currently, events seem to be mirroring the film industry; Charles Deenan has hired an undisclosed 'big name artist' for an intro sequence, and *Burn:Cycle*'s score will be available as a conventional audio CD. But how long the music industry – not exactly known for being profit-shy – will tolerate the games industry's traditionally low fees is open to question.



German musician Chris Hülsbeck has established himself as one of the world's best game composers

Chris Hülsbeck

Chris Hülsbeck is another veteran C64 soundtracker turned professional game musician. Aged 26, he now works in Langen, Germany, for Kaiko, a company which is probably best known for the excellent Amiga shoot 'em up *Apidya*, although his energetic soundtracks for Factor 5's *Turrican* games are among his most accomplished work.

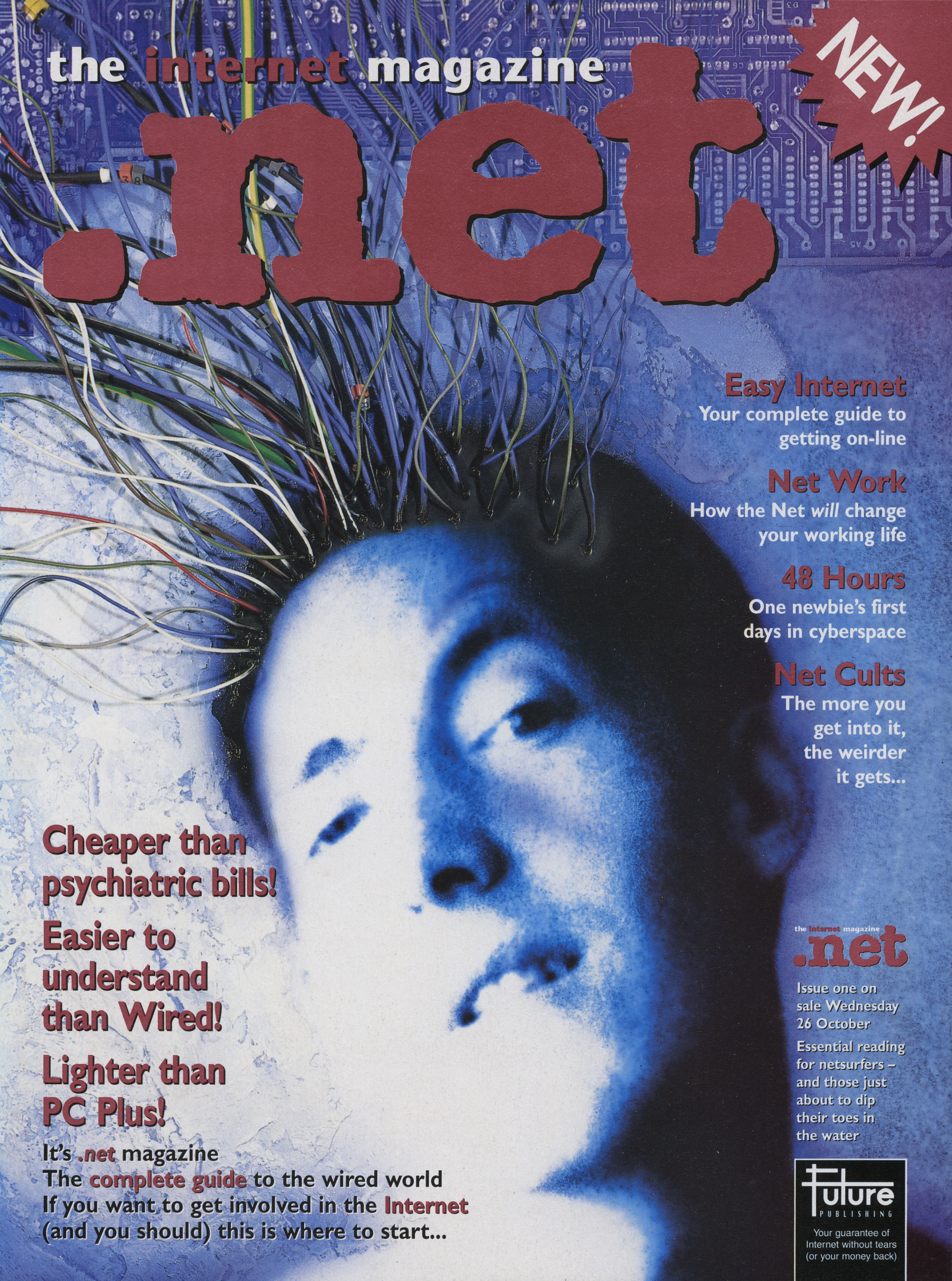
Chris' career started at the age of 14 when he entered a music competition in a German games magazine and managed to take first prize with a piece entitled Shades. This was good enough to land him a job at Düsseldorf-based Rainbow Arts (now called Softgold), where he produced the music for many games, including canned Mario clone *The Great Giana Sisters* (C64 and Amiga), *X-Out* (Amiga), *Jinx* (Amiga), *R-Type* (Amiga) and *Z-Out* (Amiga).

Chris will soon be writing music for the Sony PlayStation – and, encouragingly, will be programming it on the machine instead of just streaming digital audio. 'The PlayStation has extremely good sound hardware,' he claims. 'There are similarities to the SNES but you've got 512K sound RAM, and there are 24 voices and a reverb processor to play around with. I guess you're looking at about £1,200's worth of audio equipment on the PlayStation board.'

In Germany, Chris has released audio CDs of his music, many of which are superb. His latest, *Rainbows*, is a compilation of reworked older music from Rainbow Arts games. For ordering details, call Kaiko on 010 49 6103 52365, or fax them on 010 49 06103 24816.

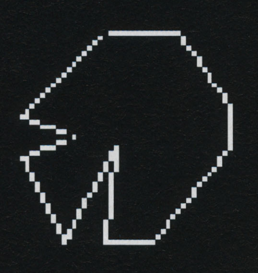


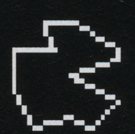
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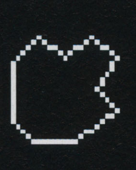


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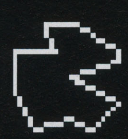


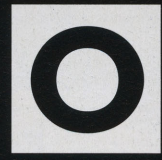




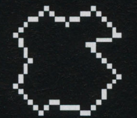
Revival of the fittest

With developers increasingly inspired by the past, more and more old games are staging comebacks. **Edge** finds that things *are* what they used to be









Old games are back. Retro gaming is in. The technology-obsessed videogames industry, which has always tended to look towards the future, is now returning to its roots.

The year is 1979. Ian Dury, Gary Numan and Buggles top the charts. Apocalypse Now, Alien, and Kramer Vs Kramer are packing them in at the local fleapit. Not The Nine O'Clock News is the funniest thing on TV. Mrs Thatcher is elected. And *Space Invaders* and *Pac-Man* are the future of interactive entertainment.

15 years later, all these things are consigned to the history books. All, that is, except *Space Invaders* and *Pac-Man*. Games like these now form part of a games revival that has begun to made its presence felt on all formats over the last year.

The pick of the born-again games is Jeff Minter's *Tempest 2000*. Released for the Jaguar to universal acclaim earlier this year, *Tempest 2000* not only excited fans of the original but also won new adherents. It has

Continued next page



since become the best-selling Jag cart by a wide margin, shifting one-and-a-half times more copies than its nearest rival.

Tempest 2000 is likely to be the first of many revamps on the Jaguar. 'There are an awful lot of classic games that have been surpassed graphically but not in terms of gameplay,' explains Atari's **Darryl Still**. 'A lot of the games on the new formats are definitely lacking in gameplay.'

Jeff Minter is already at work on a Jaguar version of *Defender*, and Atari has announced conversions of *Battlezone* and *Star Raiders*, both of which are being developed in-house, with more classics promised. 'We're making games for the millennium,' soundbites Darryl Still, alluding to the '2000' suffix tagged onto all Atari's revisited titles.

But it's not just the Jaguar that is exhuming the past. Taito has released a faithful SFC conversion of the original *Space Invaders* – even reproducing the banding effect of the strips of plastic that 'coloured' the ranks of Invaders on later editions of the coin-op cabinet. At almost half the price of normal SFC carts, it has notched up respectable sales in Japan.

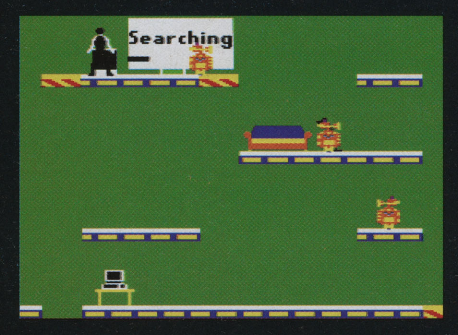
Even the PC is getting in on the act: the shareware programs *VGASPEC* and *C64EMU* are, respectively, Sinclair Spectrum and Commodore 64 emulators that can run a large library of (illegal) versions of old Speccy and C64 games, including *Manic Miner*, *Atic Atac*, *Paradroid* and *Pitstop*.

So why the sudden interest in old games? And what does it tell us about the games market today?

'Often people look at the graphics and sound and miss the fun elements of the game,' reckons **Janine Johnson** of Activision. The American company is happy to dust off its back catalogue and has already released an FMV-intensive CD-ROM revival of the *Zork* series, consisting of the disappointing *Return To Zork*, and *Pitfall: The Mayan Adventure*, a new version of David Crane's pioneering platformer. (A new SNES incarnation of *River Raid* was also developed but cancelled after a poor reception at CES.) 'The gameplay of the early games is really good and that's what we're looking to bring back,' explains Johnson.

'Often people look at the graphics and sound and miss the fun elements of the game. The gameplay of the early games is really good, and that's what we're looking to bring back'

Janine Johnson, Activision





The C64's *Impossible Mission* (left) was a breakthrough platformer for home computers. Microprose's recent *Impossible Mission 2025* for the Amiga (right) is a pale imitation

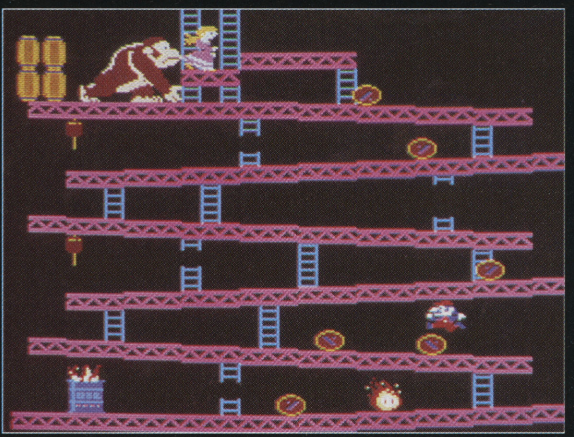
'They don't

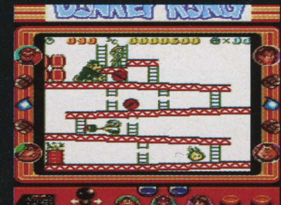
make them like they used to' is the catch-all statement that's always trotted out whenever old games are discussed. It is a generalisation, of course, but it's surprising how many people it strikes a chord with.

Early games had very limited graphics, usually consisting of no more than a single screen's worth of tiny sprites on a blank background. There were no new levels, no bigger enemies, no cut-scenes; the rewards they offered were points and, of course, the pleasure of playing the game itself. It's this simplicity that appeals to today's gamers, whether they played the originals or not. The gameplay in these early games was defined by a number of basic parameters; within this framework the player was given complete freedom. The best of today's games rely on the same philosophy – *Sensible Soccer*, *Doom* and *Street Fighter II* all use relatively few building blocks to create a comparatively open gaming environment, putting the emphasis on the player's actions rather than a preset series of events. The result is that they're not linear experiences – a complaint levelled at all too many modern games.

And for all their unsophistication, early arcade games were remarkably challenging. *Defender* was extremely basic, both graphically and conceptually, but it remains one of the most difficult games to play, let alone play well. *Asteroids* was another game that demanded great skill from the player, especially when your ship's thrust and inertia were brought into play.

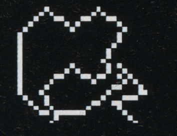
Nik Wild, project manager at Psygnosis, believes that 'games based on reactions and dexterity will come back, but not until everyone's finished showing off all the things their new machines can do with FMV and sampled sound and CD storage and whatever.' From *Shadow Of The Beast* to *Microcosm*, Psygnosis itself has done a fair amount of showing off, but it also has versions of *Damocles* and *Tir Na Nog* in

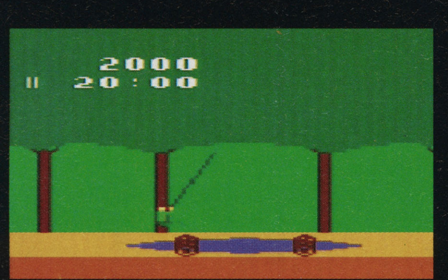




***Donkey Kong* (left) was not only Nintendo's first successful arcade machine but is also the first game to be released for the company's bizarre SNES peripheral, the Super Game Boy (right)**









The original *Pitfall* (left) on the Atari 2600 VCS. The game went on to sell over seven million copies worldwide on different formats, a figure that the new *Pitfall* (right) can only dream of

development for PC CD-ROM, plus *Dropzone* for the SNES.

There's no disputing the fact that reviving a previously successful title makes sound commercial sense. If the game is a straight port across to a new format then all the work's done, creatively at least. And if it's a product that has a strong track record, that's so much less work for the marketing department. 'We sold seven million copies of *Pitfall* on all its formats,' remembers Janine Johnson. She will no doubt be hoping that as many as a tenth of those who bought the original will fork out for Activision's new *Pitfall* game.

'There are six, eight years' worth of gamesplayers who are discovering these games for the first time,' says Darryl Still. 'There are thousands of people playing *Tempest 2000* who don't realise that the game they're playing is essentially over 10 years old.' Asked why Namco released new versions of *Pac-Man*, Namco UK's **Kevin Yanagihara** replies: 'There's still a big demand for the *Pac-Man* game in the US and that's why we developed it for the NES and Game Boy. *Pac-Man* was released 15 years ago and some of the people who played it are now 30 or 40 years old and have children. They'll buy it for their children and to play it again themselves.'

> **'Atari's past glories are based on a very strong reputation for producing very strong games. I don't think anyone can ever draw a line and say they'll never look back'**
>
> **Darryl Still**, Atari UK

More cynical

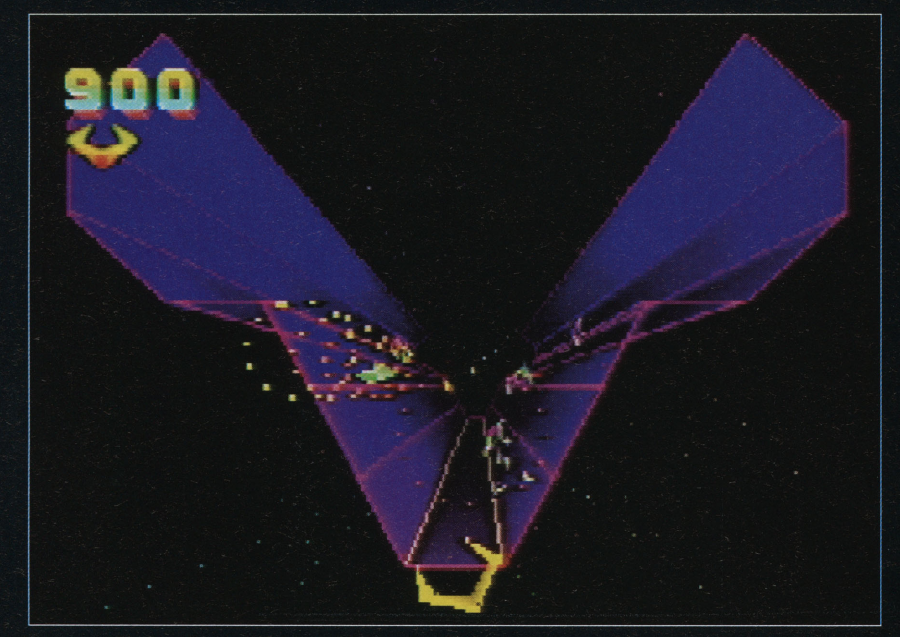
folk than **Edge** might say that the release of old games simply allows developers to avoid creating original products. 'Isn't it just that people have got new formats to put old games on and make more money without doing much more work?' suggests Nik Wild.

Not surprisingly, software companies are quick to refute allegations that they're just trying to make a fast buck. 'It's been really expensive,' claims Johnson. '*Return To Zork* cost over $2,000,000 and it's not inexpensive to get Sound Deluxe Labs' (the Oscar-winning sound designers for JFK who produced *Pitfall*'s sonics).

'The games still have to be developed from scratch, the same as any other one,' argues Darryl Still. 'We can't port code from the arcade machine into a Jaguar and just fill in the polygons. We had to start over.' He strongly defends Atari's raiding of its back catalogue: 'Atari's past glories are based on a very strong reputation for producing very good games,' he maintains. 'I don't think anybody can ever draw a line and say they'll never look back. We went back and learned from what we did.'

Of course, behind the desire for 'pure' gameplay – and the desire of companies to make money – lurks something that few can bring themselves to acknowledge: nostalgia. The *Space Invaders* generation, having graduated to 'home computers' in the early '80s, kept the flame burning until the Sega and Nintendo console boom came (and went). Now, faced with a stale 16bit market and no clear direction for the future, some are looking back to more innocent, less complex times.

This new wave of old games is about more than nostalgia, though. New – and, in some cases, outstanding – games are being produced that ape classic titles. The reason developers are casting an eye over their illustrious pasts could be that they've finally realised that graphics maketh not the game, and that what people want is not 'interactive movies' but videogames. The renewed interest in the past shows that gameplay is still what counts. But then, didn't we know that all along?



The Jeff Minter-programmed Jaguar game, *Tempest 2000*, proved what the purists already knew: despite being 10 years old, *Tempest* is one of the most intense videogames experiences ever

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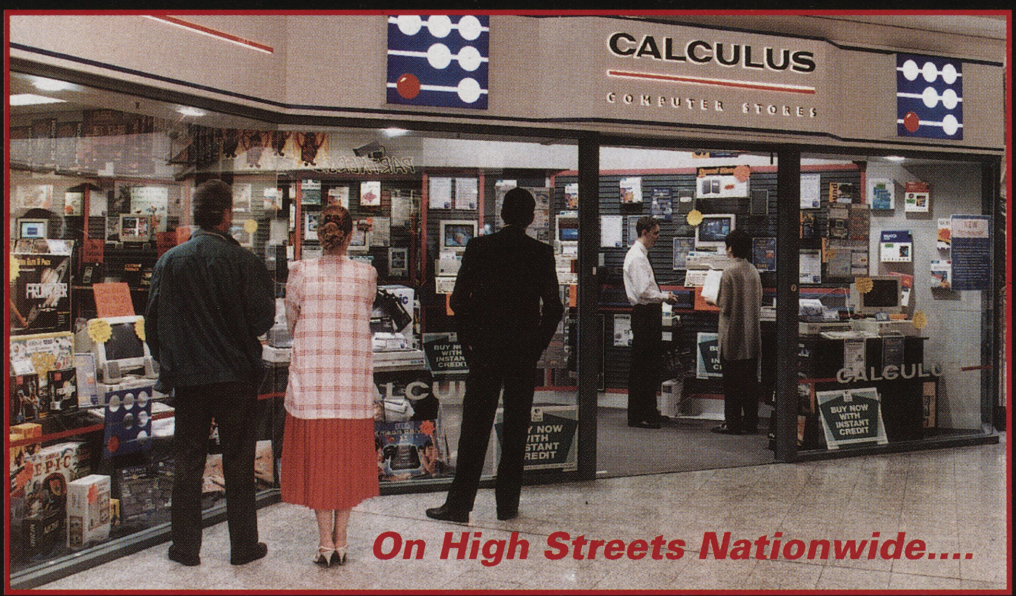
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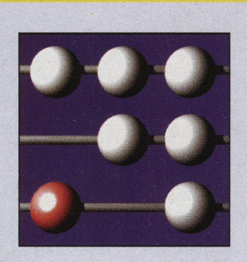
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testscreen

Magic Carpet



***Magic Carpet*'s graphics probably represent the PC's finest hour. Two enemy magi (wizards) slog it out over a glittering sea while you sit back and annihilate them both (above). An enemy balloon and a kraken suffer the full force of your wrath (inset)**

Format:	PC
Publisher:	Bullfrog
Developer:	In-house
Price:	£50
Release :	Nov 18 (UK)

Virtually every successful software company has made it big by carving out a specific niche for itself. LucasArts dominates the graphic adventure genre with hits like *Monkey Island* and *Sam 'n' Max*. Maxis depends entirely on its *Sim* series for sales revenue. And Electronic Arts is the undisputed champion of the sports sim. So when a developer eschews the style of game it is best known for and flies off in a completely unexpected direction, people sit up and take notice. Especially when that company is the sickeningly successful Bullfrog.

Bullfrog made its name with intensely playable strategy games like *Populous*, *Powermonger* and *Syndicate*. However, its new creation is a full-on arcade trip whose main strength is its luscious graphics. In fact, in *Magic Carpet* Bullfrog has managed to create one of the finest realtime environments ever seen. As you explore on the magic carpet which is your mode of transport throughout the game, the landscape scrolls beneath you with breathtaking speed and smoothness. The texture-mapped polygons are expertly depth cued and shade off into a beautiful mist effect in the near distance – this not only softens the whole view, making it more realistic, but it also obviates the need to draw to the horizon, allowing the game to run faster and use less memory. A similar effect was seen in the Novalogic shoot 'em up *Comanche*, but the results of the proprietary 'Voxel Space' technique used in that game were far inferior.

You don't need a top-of-the-range Pentium to make the earth move, either: even on a





The volcano spell only appears later in the game. It showers everything around with lava and is the most effective method of razing an opponent's castle to the ground. Before (left) and after (right)

486DX2/66 the frame rate is very fast. If you have a lower-spec machine, you can speed the game up considerably by selecting one of the lower-detail options, but many players will decide that the game's full graphical finery enriches the atmosphere so much that it easily compensates for the slightly reduced feeling of motion.

Magic Carpet is also blessed with a model control system. It's sufficiently sensitive to permit fine adjustments but still allows violent evasive action. Moving the mouse affects pitch and roll and the cursor keys control sideways movement and speed. You automatically rise over hills and feel no ill effects if you collide with a wall, which makes the game less of a flight sim and more of an arcade experience.

But, of course, games live or die by their gameplay. And the gameplay in *Magic Carpet* is bloody marvellous. You play a wizard who has to do battle with up to seven other wizards in each of the game's 50 worlds as well as all that world's other inhabitants. Killing a sentient being (peasants don't count) releases its mana (magical energy) in the form of a ball. Casting a spell turns these balls from a neutral gold into your playing colour (eg blue), which allows you to dispatch a balloon from your

Continued next page

Options

Magic Carpet has a wide range of options to suit the power of your PC. Clouds can be added to the sky with a minimal loss of speed. The water can be set to reflect silhouettes only, although the result is that you lose the stunning effect of full reflections on rippling water. Anti-aliasing can also be turned on to soften edges, but this has a heavy CPU burden and can make the landscape look fuzzy on a small monitor. Options making their first appearance in a mainstream PC game include support for 3D glasses and stereogram generation.





Summon an army of skeleton warriors to aid your attacks (above). This mirror (top left) teleports you to a random place on the map. An earthquake spell in the process of destroying a castle (top right). Killer bees attack in swarms (inset). Mana balls have to be changed to your colour before you can capture them (right)

castle to collect them. As your balloon drifts around gathering mana, it becomes a target for other wizards looking to steal your gains. Defending it while maintaining pressure on your opponents is an art in itself. As you collect more mana your spells become more effective and your castle becomes more heavily fortified – archers even appear on the ramparts to ward off attacks.

There are 12 different types of enemy on which you can unleash your spells. All possess an array of magic and physical attacks which they employ with unnerving intelligence. Some attack as individuals while others swarm towards you in a collective attempt to knock you out of the sky.

All this means that *Magic Carpet* is the best of all worlds. Not only is it a visual treat, a thoroughly exhilarating experience and a frantic blast, but it incorporates just the right amount of strategy to ensure that you never get bored. Bullfrog has distilled all the highly addictive elements of its God sims into a single game, and added raw pace. At its most basic, it's an inspired mix of *Populous* and an arcade game, combining the best graphics outside an arcade with freeform gameplay. It's also a seriously longterm challenge, especially with the superb network option which allows up to eight players to contest the airspace in a frantic orgy of multiplayer violence.

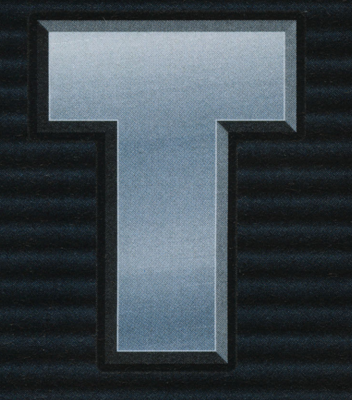
Magic Carpet more than vindicates Bullfrog's change of course. It's a game that's as addictive, demanding and visually impressive as *Doom II*. And that's some achievement.

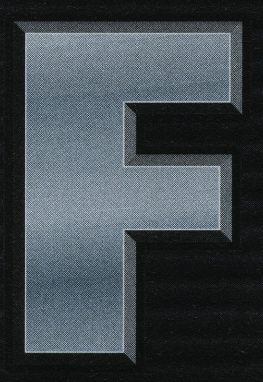
Edge rating: **Nine** out of **ten**



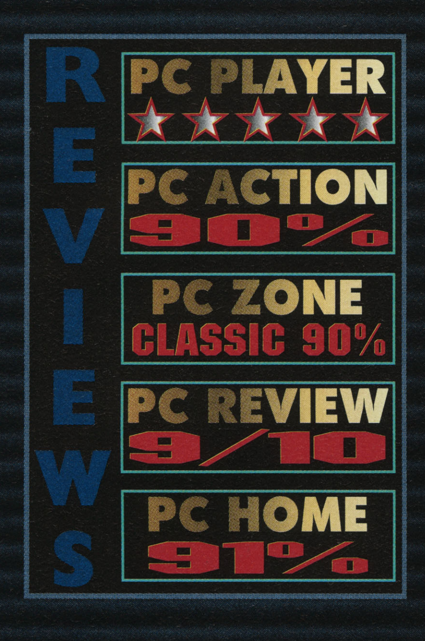


Five seconds ago this banner flew above a mighty fortress (top right). The genie is a potent foe (right). 3D glasses are supported (top). Water is fully reflective (above middle) The map alters as your geomorphology experiments continue (above)











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"The graphic detail is quite superb, with stunning visuals and strong sense of image, TFX is quite often like watching a movie... when I first saw TFX my jaw dropped so far it took me 15 minutes to find it again! It's fast, good looking and fun." PC REVIEW







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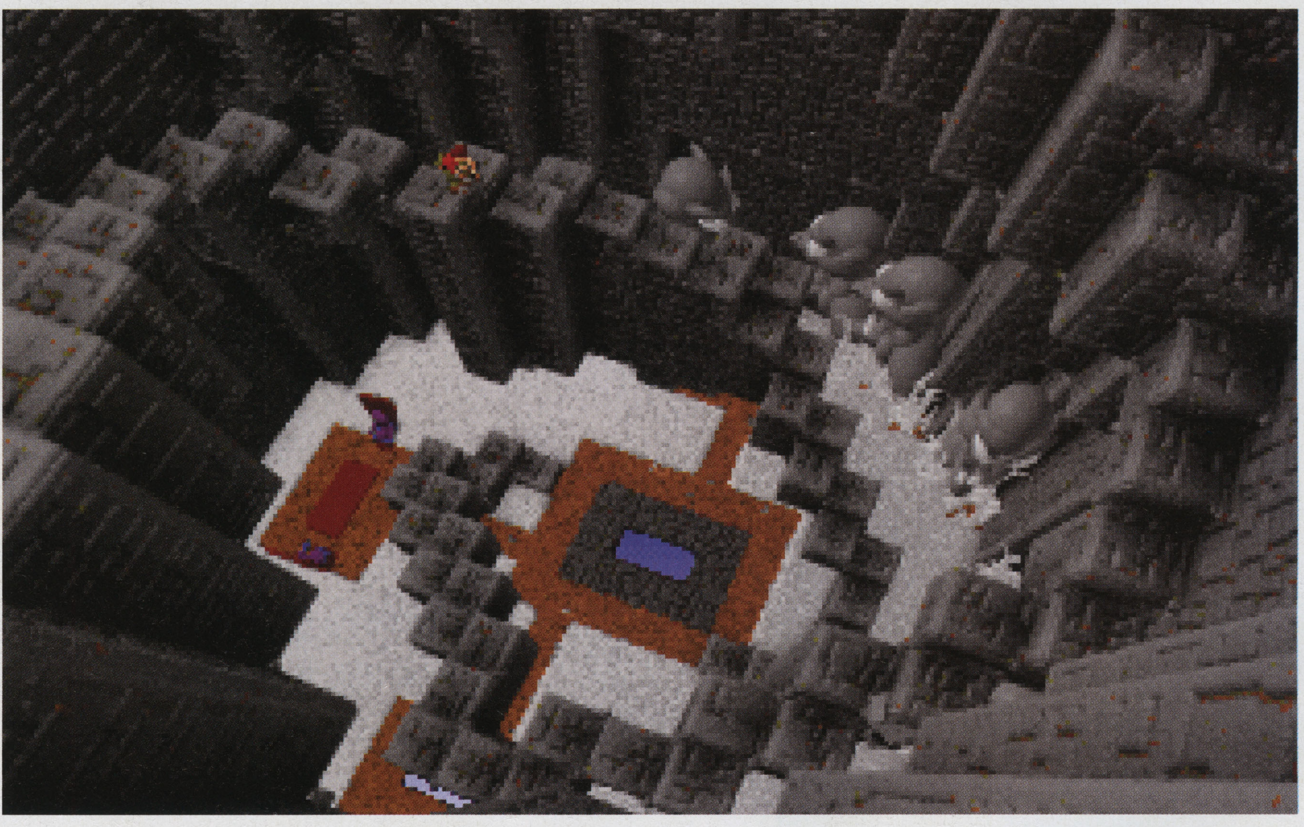
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Ecstatica



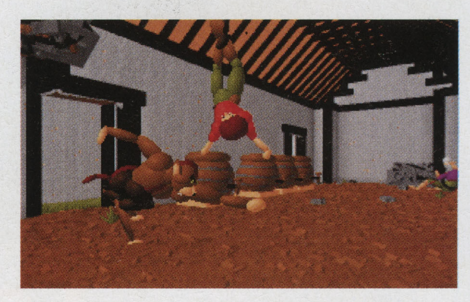
Having finally made it to the crypt below the chapel, the game's protagonist descends a roughly-hewn stone staircase with justified trepidation. At the bottom lies the key to the savage fate that has befallen this once-peaceful medieval village. But there are plenty of mysteries yet to unravel

Format:	PC CD-ROM
Publisher:	Psygnosis
Developer:	A Spencer A Maindron
Price:	£45
Release :	Nov '94 (UK)

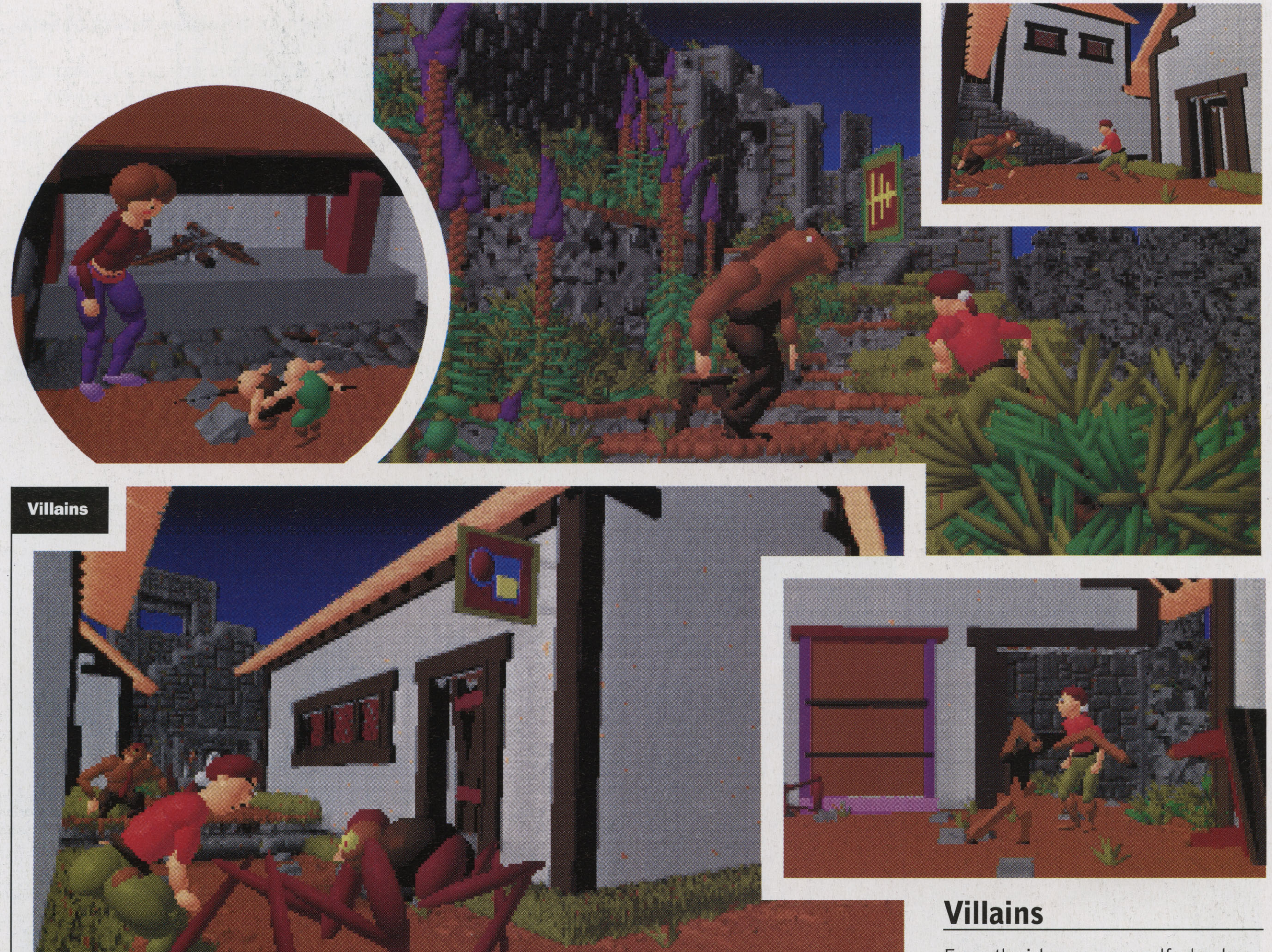
It's not perfect, but it's pretty close. *Ecstatica* is in many ways a work of genius; one of the most exciting, gripping and startlingly original games to appear on the PC in recent years.

The programming virtuosity of Andrew Spencer has already been well documented in **Edge** (issue 13). His ellipsoid-based animation engine brings an amazing level of solidity and fluidity to the characters and locations of the game, perfectly complemented by the cinematic storytelling skills and brilliantly detailed animations of Alain Maindron. The result is a triumph of the imagination, a stunning creative vision made possible by remarkable technical innovation.

Most closely resembling the *Alone In The Dark* games, *Ecstatica* actually manages to improve on certain aspects of Infogrames' groundbreaking series. Visually, it's more varied, convincing and arresting, although the viewpoints are, at times, a little less well-chosen. The sound, too, is superior – punches



The werewolf exacts his vicious revenge by smacking you around with wince-inducing force – and all you can do is watch him do it



Villains

Fighting skills are just as important in *Ecstatica* as conventional adventuring curiosity. Here the hero (or heroine – you can play a woman throughout the game) engages a number of odious creatures. Most original is the tough-talking table that springs to life if you try to put an object down on it

connect with shocking force. The movements of the characters are wonderfully realistic and there's a huge variety of special animations, seamlessly integrated into the action. Walking along a path, your character may stop briefly to relieve himself on the verge, then carry on as directed, but you never feel that you've lost control; nothing interrupts your involvement.

In fact, the mechanics of *Ecstatica*, complex though they are, remain for the most part completely invisible, leaving the game free to develop its own distinctive emotional atmosphere and character. And, despite the colourful, cartoon-like graphics, it's a character rooted in violence. Much as it would be nice to say that it's only there is as part of the plot, absolutely necessary to conjure up a sufficiently scary atmosphere, that would simply be sidestepping the fact that *Ecstatica* is, for much of the time, a downright unpleasant game.

Apart from the fights, and the unspeakably grisly horrors that litter the landscape, there's the question of your own death – an event that occurs with upsetting regularity. There are many ways to kick the bucket, and each is utterly horrific in a different way. Mauled by a minotaur, sliced in half by a falling portcullis or mashed to a bloody pulp by a hammer-wielding maniac – the choice is yours. And your perception doesn't end when you die, so you get to see the subsequent actions of your murderer. And they're uniformly disagreeable.

Ecstatica has transcended the games as movies/movies as games debate and achieved a status that previous CD-ROM titles have only hinted at: that of art. The potential of the medium to deliver a unique kind of

Villains

From the irksome werewolf who dogs your progress right from the start of the game to the invisible footsoldiers (you can only see their swords, shields and sandals) that impede you later on, there's an impressive variety of imaginative and original adversaries in *Ecstatica*. Many can be killed fairly easily, but a couple of them are invincible. You can either take your chances and make a run for it – although the faster ones will catch up with you eventually – or stand and fight. Hit them enough and they'll back off for a while to nurse their wounds, but don't count on them remaining subdued for too long.

Continued

Continued

interactive experience, satisfying both gameplaying and aesthetic demands, has been much debated but never fully realised. Now, after years of false starts, there exists a product that mixes the techniques of films, cartoons, comics and games with astonishing success, then adds a secret ingredient that can only be described as sheer imaginative flair. And we're left breathless with wonder.

Well, almost. It's inevitable that a game so ambitious will have its flaws. The main problem is combat. Due to the admirable simplicity of the control system, there are only a couple of moves available. Once you've got used to it, this makes for a nicely strategic challenge, where ducking and running away are just as important as your hand-to-hand skills, but it does lead to repetition. More fundamentally, the game's structure is neither rigorous enough for adventure fans or frenetic enough for action addicts.

However, *Ecstatica* is still an outstanding achievement. Its action is set in a uniquely believable and consistent fantasy world, where monsters stay put when slain and you can see the actions of other characters through windows. This makes for a totally engrossing gamesplaying experience.

Most important, though, is the element of surprise. *Ecstatica* offers genuine shocks, some amazing twists, and some exceptionally beautiful and original graphical treats. It's not just a good game; it engages you on an emotional level, invoking fear, wonder, revulsion and delight in equal measure.

Edge rating: **Eight** out of **ten**



There are plenty of human characters for you to meet, as well as the somewhat unfriendly monsters and demons. The court magician turns you into a frog (top), and the dying inhabitants of the village beseech your help (bottom). All the voices are supplied by English actors, with general success

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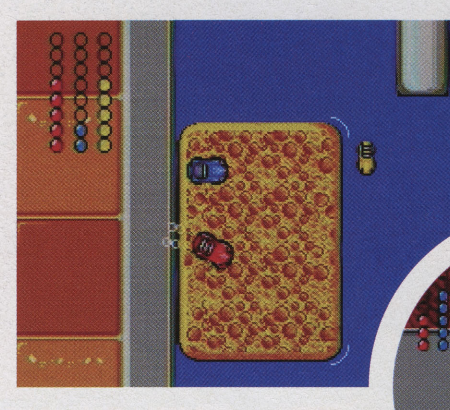
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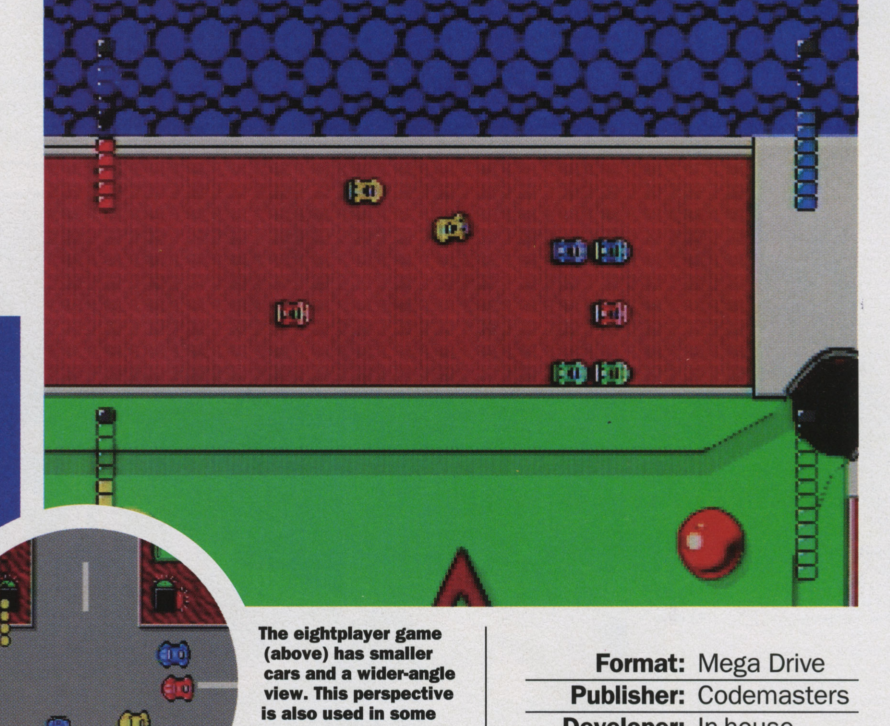
Micro Machines 2

Codemasters, well known as a stack 'em high, sell 'em low budget label, surprised everyone in 1992 with the highly original *Micro Machines*. On the surface it was just another top-down racer, but it was distinguished by a superb twoplayer option and well-themed levels inspired by the Micro Machines model cars tie-in.

In *Micro Machines 2*, the single-screen twoplayer race mode has been tweaked slightly to accommodate extra cars. The screen scrolling keeps up with the lead car, and if a car goes offscreen it drops out of the race. When one racer has burnt off all the others it scores a point (the first car out loses one) and the other cars rejoin the race. The player with the most points at the end of the race wins.

There's a natural balance to this system which makes for very exciting games. The leader drives close to the edge of the screen and has to trust his memory, his reactions and his luck to stay on the course, while the tail-ender has an easier drive as he can see more of the track in front.



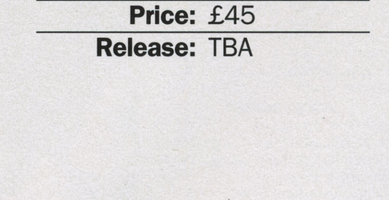


The eightplayer game (above) has smaller cars and a wider-angle view. This perspective is also used in some standard levels (inset)

The simultaneous eightplayer option – apparently the first of its kind – puts two players on the same pad, one using the keys, another the direction pad. It works fairly well but it's a little too awkward to play for long.

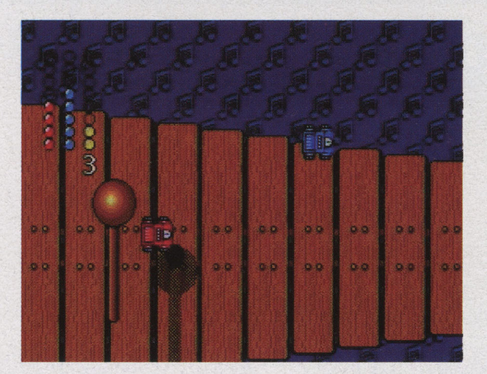
The 54 new tracks, 16 vehicles and new play options, including a league, a tournament, team play and time trials with battery backed-up lap records, extend the life of both the multiplayer and the oneplayer game.

Anyone who has played *Micro Machines* knows what a great little game it is. This sequel expands the concept so much that it's practically irresistible. Mega Drive owners will have to wait a long time to find a more playable cartridge. **E**

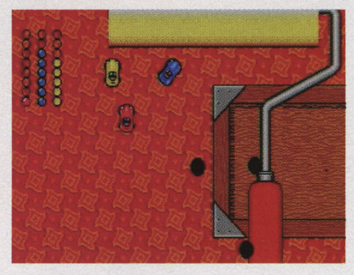


Format:	Mega Drive
Publisher:	Codemasters
Developer:	In-house
Price:	£45
Release:	TBA

Edge rating: **Eight** out of **ten**



In the music room you have to sneak under the descending sticks of the xylophone player to win



A roller doubles as a landing pad for one of the jumps in the workshop



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FIFA International Soccer

Format:	3DO
Publisher:	Electronic Arts
Developer:	Extended Play
Price:	£50
Release:	November (UK)

Electronic Arts virtually cornered the 16bit soccer sim market with *FIFA Soccer*. Now the company is trying to repeat that success in the 32bit field. EA's sports division has channelled all its considerable creative talents into creating the definitive next-gen footy game, and the result is 3DO *FIFA*. Given that *FIFA* went down well on the SNES and Mega Drive and that the 3DO has obvious technological advantages over those machines, 3DO *FIFA* must be the best soccer sim ever, right? Well, almost.

It's obvious from the moment you boot up the game that 3DO *FIFA* is premier-division stuff. A lavish intro, toe-tapping music and video clips from great moments in soccer history make it arguably the best-presented 3DO game yet. Like most EA sports games, it also has an exhaustive range of options. You can play an exhibition match, enter the World Cup or even set up your own league.

After the teams have been chosen, it's on to the game proper. The camera zooms in on the stadium, the players sprint onto the pitch to an enthusiastic roar from the crowd and the match gets under way. It's now that things start to get really interesting. Firstly, there are seven set camera angles. Admittedly, a few of them are largely decorative – they're too close to the action to be useful – but the remaining ones allow you to see enough of what's going on and give you a sufficient range of perspectives to make 3DO *FIFA* a genuinely 3D experience.

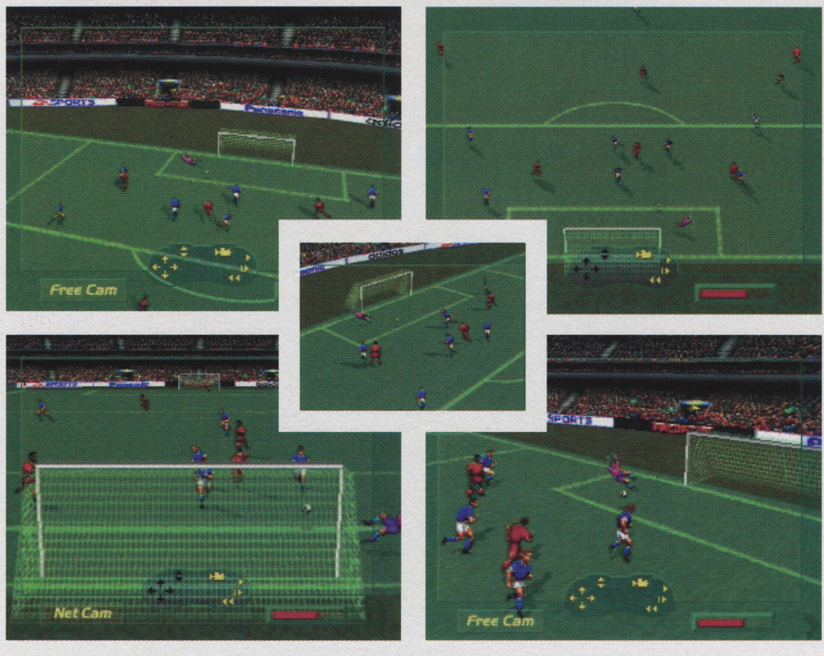


Goal kicks are less a tactical exercise than a case of booting the ball as far as possible

In fact, on the visual side there's virtually nothing to criticise in 3DO *FIFA* – choose the tele-cam mode, sit back, and you could almost be watching a real televised match. Not only do the players run, tackle and shoot in an acceptably lifelike manner (although not quite well enough to give credence to EA's claim that each character can call on over 2,000 frames of animation) but they also have a reasonable level of artificial intelligence. The pitch is also superbly textured and scrolls around smoothly and convincingly.

As if that weren't enough, the sound is wonderful too. All the crowd noises were sampled from the '94 World Cup and are completely event sensitive. Unlike some CD based football games – *Sensible Soccer* on the Mega CD, for example – there's no noticeable delay between an event on the pitch and the crowd's reaction to it. If a powerful, swerving shot is tipped over the bar, you won't have to wait until the corner kick is taken before you hear the crowd gasp.

But, of course, the most important aspect of any sports sim is playability, and this is where 3DO *FIFA* takes a slight tumble. The 16bit versions were never the most intuitive or strategic of soccer sims – they relied instead on their arcade-like action. And although the aesthetics have been greatly improved for the 3DO, the play mechanics have simply been ported over from the previous game.



During an action replay, free-cam mode (top left and bottom right) allows you to position the camera at a position of your choice. Set angles can also be accessed, including the dramatic net-cam (bottom left) and the remote stadium-cam (top right)

3DO *FIFA* offers seven preset viewpoints during realtime play. 1 Ball-cam (limited by narrow field of view) 2 Stadium-cam (good, all-purpose view) 3 Shoulder-cam (good, but the players can appear too far away) 4 Cable-cam (probably the most effective view) 5 Tele-cam (the tracking makes passing difficult) 6 Endzone view (the players are often too far away) 7 Sideline view (the changing angles can be confusing)

The result is that those imperfections that always made playing *FIFA Soccer* a rather frustrating experience for die-hard football fans are still present. No matter how many hours you invest in practice, you never feel that you're fully in control of events. It's very difficult, for example, to string a series of quality passes together, because the opposition always man-marks. This wouldn't be so bad if you could just dribble past the opposing player, but their close proximity makes this impossible too. So you end up simply hoofing the ball up the pitch the moment you receive it in the (often vain) hope that one of your players is on the other end.

Scoring goals is obviously what football is all about, but in *FIFA Soccer* there's no real technique for getting the ball in the back of the net; it's just a case of running near the goal and blasting away in its general direction. The peculiar thing is that, because of the arcade nature of the game, you're just as likely to score from the halfway line as you are from inside the penalty area.

In its favour, 3DO *FIFA* does feature the most comprehensive and versatile action-replay system you're ever likely to see. As well as being able to rewind and fast-forward the sequence, you can view it from almost any angle you wish. This is a very effective, professional touch which rounds off an already polished piece of software.

One of the reasons for the huge impact made by the original *FIFA Soccer* was its excellent multiplayer option – in fact, many people regarded it as the whole point of the game. 3DO *FIFA* is equally adept in that department and allows up to six people to play simultaneously, which makes for a hectic but supremely enjoyable experience.

The best word to describe 3DO *FIFA Soccer* is 'fun'. It looks and sounds great and the action is fast and furious, but it's too clumsy to be taken seriously. The truth is that 3DO *FIFA* just isn't in the same league as *Sensible Soccer*. If you enjoyed the 16bit version, you'll find the 3DO game pretty much irresistible. If you didn't, the alluring visuals are unlikely to convert you.

Edge rating: **Seven** out of **ten**



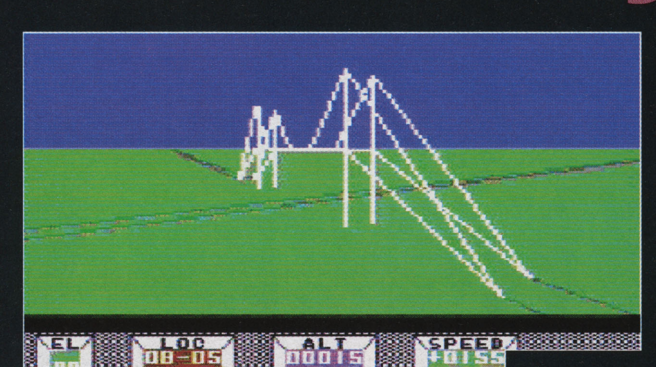


The players are detailed and move smoothly, but the opposition's close marking is frustrating

retroview

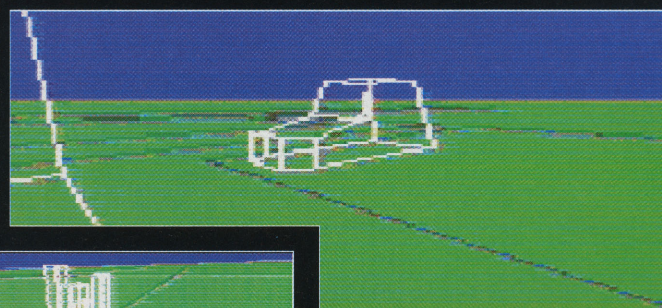
Many years ago, there existed a breed of games known as The Playable Ones. Their tools were primitive but their skill in the art of gameplay was legendary

Mercenary



Skimming over the surface of Targ in your newly acquired – ie stolen – spaceship is great fun

Edge welcomes quality contributions to Retroview. Entries must be in Edge style and approximately 250 words long. Published contributions will win a year's subscription to Edge. Address: Retroview, Edge 30 Monmouth Street, Bath BA1 2BW. Fax: 0225 338236. E-mail: edge@futurenet.co.uk





Paul Woakes proved that even the C64 could handle fast, smooth 3D vectors

Back in 1986, long before the phrase 'virtual reality' had even been invented, Paul Woakes created a game that thrilled gamers with a fully interactive virtual world. That game was *Mercenary*.

The plot of *Mercenary* is straightforward. You've crash-landed on the planet Targ and have to earn enough money to escape. Targ's capital city is in a state of civil war, and the two rival factions both want someone to do their dirty work for them. And so begins your career as a mercenary.

The freedom of movement available in *Mercenary* is breathtaking for such an early title. The game sucks the gamer into a virtual experience that is completely engrossing and provides an incomparable feeling of 'being there'; the firstperson perspective and smoothly scrolling vector graphics that depict the buildings, roads and vehicles really do make you feel as if you're exploring an alien world. And the plethora of puzzles makes the game challenging as well as enthralling.

Mercenary offers a level of variety and excitement that puts many modern releases to shame. For example, early in the game you stumble upon an aircraft close to your crash site. A message appears onscreen asking if you'd like to buy it. Because you're short of cash you steal it instead. You climb in and power up the engines. Soon you're wrestling with its controls as you hurtle above the urban landscape with the authorities in close pursuit.

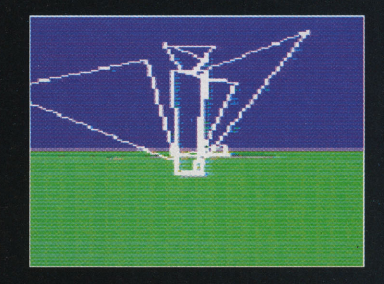
Although *Mercenary* was one of the first immersive videogames experiences, it didn't take a ridiculously high-specced PC to do it justice – just a lowly 8bit architecture and some clever programming. Maybe it's now time for an updated version of Woakes' wireframe classic: *Mercenary III* with Gouraud-shaded and texture-mapped polygons?

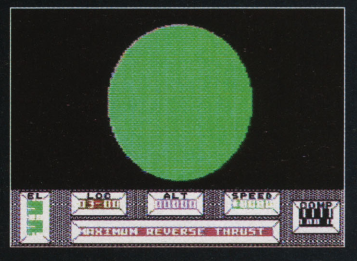
Searching the underground city is an integral part of *Mercenary*. You can pick up items here which can be used to barter with later on

This month's Retroview was supplied by B Summers, Oldham.



Format: C64 (version shown), Atari 400, Amstrad CPC464, Amiga, Atari ST
Publisher: Novagen
Developer: Paul Woakes
Price: £10-£20
Released: 1986





This structure (top) is one of the first things you see in the game. In *Mercenary* you can fly wherever you want – even to the sun (above)

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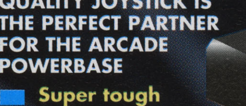
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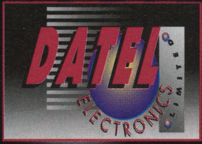
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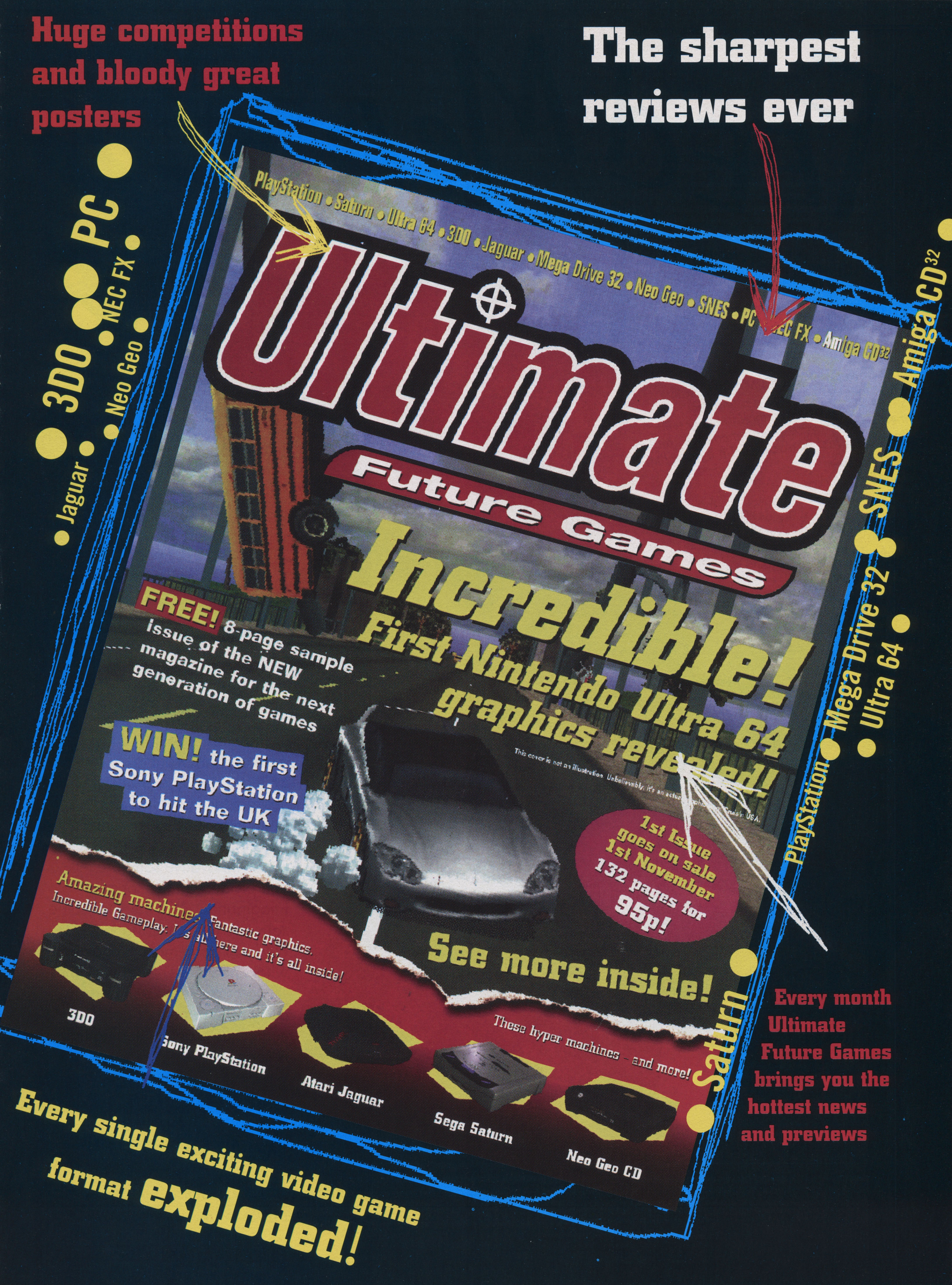
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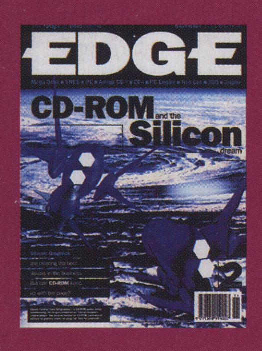

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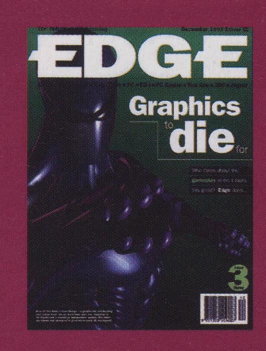

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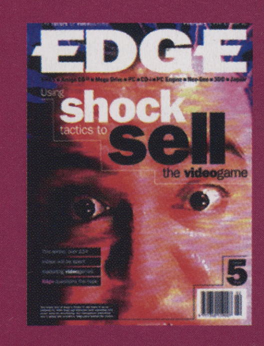
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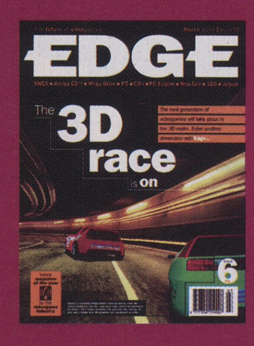
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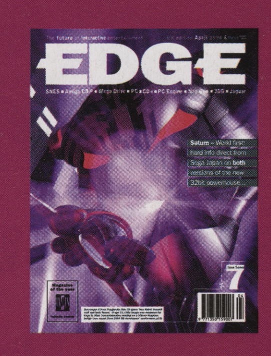


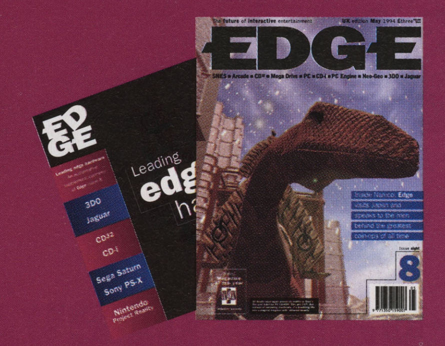


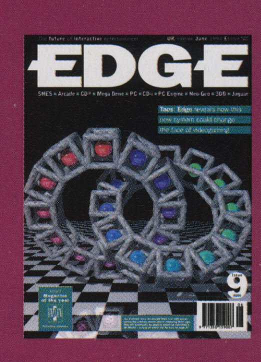


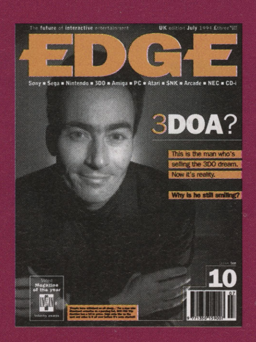


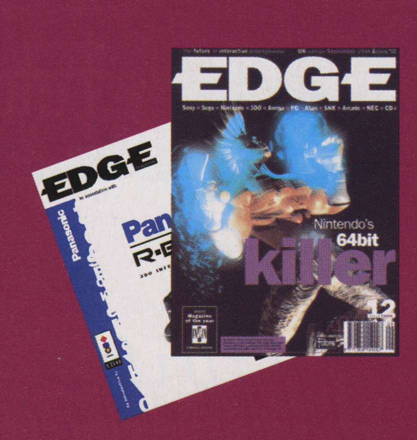


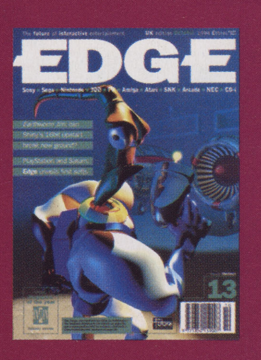














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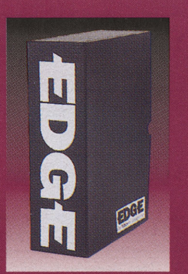
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Edge 4
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The hard **sell**: how games are marketed • **PlayStation** specs • **Jaguar:** developers predict the machine's future • **Reviews:** *Sam And Max* (PC); *Cannon Fodder* (Amiga); *Rebel Assault* (PC CD-ROM); *Crescent Galaxy* (Jaguar); *Mad Dog McCree, Stellar 7* (3DO); *Liberation* (CD32); *Actraiser 2* (SNES); *SubWar 2050* (PC)

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Has the dream turned sour for **Trip Hawkins**? • Out of **sync:** global incompatibility explored • **Reviews:** *SOS* (SNES); *Pacific Strike* (PC); *Super Wing Commander* (3DO); *Heavenly Symphony* (Mega CD); *The 7th Guest* (CD-i); *Windjammers* (Neo-Geo); *Flying Shark* (FM Towns Marty)

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The secret is out: first details of **Bulldog**, 3DO's answer to the PlayStation • **CES:** report on the show that resurrected Nintendo, featuring *Donkey Kong Country*, *Killer Instinct* and *Cruis'n USA* • The **rules** of the **game: Edge** explores the mysterious art of gameplay • **Reviews:** *Outpost* (PC); *Top Hunter* (Neo-Geo); *Wolfenstein* (Jaguar); *Super Street Fighter II* (Mega Drive); *TIE Fighter* (PC); *Shock Wave* (3DO); *Kikikaikai 2* (SFC) • With FREE **3DO** supplement

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First shots of **PlayStation** and **Saturn** games, including *Panzer Dragoon*, *Motor Toon Grand Prix* and *Clockwork Knight* • **Siggraph '94: Edge** reports from the world's premier computer graphics show • ***Ecstatica:*** the game that could take PC 3D graphics into new realms • **Reviews:** *Road Rash* (3DO); *Earthworm Jim* (SNES/MD); *Alone In The Dark* (3DO); *Mortal Kombat II* (SNES/MD); *Burning Soldier* (3DO)

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Jeux sans frontières: Are French videogames now ready to take on the world? • **LucasArts: Edge** visits the Star Wars gamehouse • **Saturn** previews: *Virtua Fighter* and *Tama* • First **PlayStation** *Ridge Racer* shots • **Reviews:** *Doom II: Hell On Earth* (PC); *Alien Vs Predator* (Jaguar); *Inferno* (PC CD-ROM)

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Charts

The latest **listings** from throughout the world of videogames

Mega Drive

1. **Mortal Kombat II** ***Acclaim***
2. Sonic The Hedgehog *Sega*
3. FIFA International Soccer *Electronic Arts*
4. Jungle Book *Virgin*
5. Super Street Fighter II *Sega*
6. PGA European Tour *Electronic Arts*
7. Sonic Spinball *Sega*
8. Sonic The Hedgehog 3 *Sega*
9. Mickey And Donald *Sega*
10. Sonic The Hedgehog 2 *Sega*

SNES

1. **Mortal Kombat II** ***Acclaim***
2. FIFA International Soccer *Ocean*
3. Super Mario World *Nintendo*
4. Starwing *Nintendo*
5. The Jungle Book *Nintendo*
6. Mortal Kombat *Acclaim*
7. Super Mario Kart *Nintendo*
8. Street Fighter II *Capcom*
9. Super Metroid *Nintendo*
10. Sim City *Nintendo*

PC

1. **Sim City 2000** ***Maxis/Mindscape***
2. Frontier: Elite 2 *Gametek*
3. TIE Fighter *Virgin*
4. Theme Park *Electronic Arts*
5. Lemmings 2 *Psygnosis*
6. X-Wing *US Gold*
7. Microsoft Space Simulator *Microsoft*
8. IndyCar Racing *Virgin*
9. Microsoft Flight Simulator *Microsoft*
10. FIFA International Soccer *Electronic Arts*

US: all formats

1. **Road Rash** ***Electronic Arts (3DO)***
2. Breath Of Fire *Square Soft (Genesis)*
3. Super Street Fighter II *Capcom (SNES)*
4. Jungle Book *Virgin (SNES)*
5. Mega Man IV *Capcom (NES)*
6. The Death & Return Of Superman *Sunsoft (SNES)*
7. Super Street Fighter II *Capcom (Genesis)*
8. Jungle Book *Virgin (Game Boy)*
9. Mega Man X *Capcom (SNES)*
10. FIFA International Soccer *Electronic Arts (SNES)*

Amiga CD32

1. **Simon The Sorcerer** ***Adventure Soft***
2. Frontier: Elite 2 *Gametek*
3. Nigel Mansell's World Ch'ship *Gremlin Graphics*
4. Zool 2 *Gremlin Graphics*
5. Superfrog *Team 17*
6. Humans 1 & 2 *Gametek*
7. Trivial Pursuits *Domark*
8. Banshee *Core Design*
9. Gunship 2000 *Microprose*
10. International Sensible Soccer *Renegade/Mindscape*

Mega CD

1. **Tomcat Alley** ***Sega***
2. FIFA International Soccer *Electronic Arts*
3. Ecco The Dolphin *Sega*
4. Lethal Enforcers *Konami*
5. Prince Of Persia *Sega*
6. Battlecorps *Core Design*
7. Ground Zero Texas *Sony Imagesoft*
8. Sewer Shark *Sony Imagesoft*
9. Batman Returns *Sega*
10. Sonic CD *Sega*

PC CD-ROM

1. **Theme Park** ***Electronic Arts***
2. Rebel Assault *US Gold*
3. Encarta *Microsoft*
4. Sam And Max Hit The Road *US Gold*
5. The Journeyman Project *Gametek*
6. TFX *Ocean*
7. Frontier: Elite 2 *Gametek*
8. Ishar 2: Messengers Of Doom *Silmarils*
9. Day Of The Tentacle *US Gold*
10. Outpost *Sierra Online*

CD-i

1. **The 7th Guest** ***Philips***
2. Earth Command *Philips*
3. Palm Springs Open *Philips*
4. Little Divil *Philips*
5. Voyeur *Philips*
6. Video Speedway *Philips*
7. Compton's Encyclopaedia *Philips*
8. Steel Machine *Philips*
9. Striker Pro *Philips*
10. Hotel Mario *Philips*

UK charts courtesy of Gallup

Edge readers' most wanted

Which item of videogames hardware or software – real or vaporous – would you most like to get your hands on? Write to Edge Most Wanted, Edge, Future Publishing, 30 Monmouth Street, Bath, Avon BA1 2BW, and confess your greatest desires

1 Cruis'n USA *(Ultra 64)*



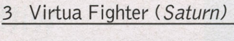
Midway's texture-mapped racer, *Cruis'n USA*, becomes Edge's most desired game this month. And the only place you'll be able to play it, outside of an arcade, is on Nintendo's Ultra 64, released in 1995

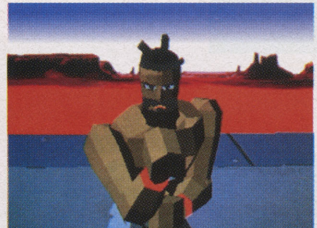
2 Ridge Racer *(PlayStation)*



PlayStation *Ridge Racer* is only half-finished, but the game is already becoming a legend

3 Virtua Fighter *(Saturn)*





Sega's arcade beat 'em up is also heading for home conversion and also creating serious excitement

4 Little Big Adventure *(PC)*



Adeline's superb-looking arcade adventure promises to be one of the year's best PC games

5 Heart Of Darkness *(PC)*

Amazing Studio's *Heart Of Darkness* combines great visuals with absorbing gameplay

Arcade: dedicated

1 **Daytona GP**
Sega

2 Ridge Racer
Namco

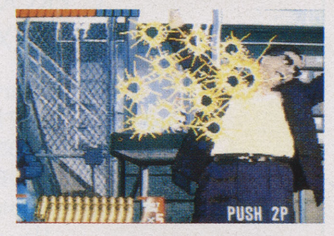
3 Wing War
Sega

4 Suzuka 8 Hours
Namco

5 Lethal Enforcers II
Konami







Sega's *Daytona GP* (top) still leads the dedicated charts. *Wing War* (middle) swoops straight in at number three, with *Lethal Enforcers II* completing the trio

Japan: all formats

1 **Mother 2**
Nintendo (SFC)

2 Breath Of Fire
Capcom (SFC)

3 J League: Excite Stage '94 2
Epoch (SFC)

4 Fatal Fury Special
Hudson Soft (PC Engine)

5 Super Street Fighter II
Capcom (SFC)

6 Super Puyo Puyo
Banpresto *(SFC)*

7 Super Power League '94
Hudson Soft (SFC)

8 Super Space Invaders
Taito (SFC)

9 Super Bomberman 2
Hudson Soft (SFC)

10 Final Fantasy VI
Square Soft (SFC)







Nintendo's involving RPG, *Mother 2* (top) claims the top slot in Japan, while Capcom's *Super SFII* (middle) and Square Soft's *Final Fantasy VI* (bottom) slide

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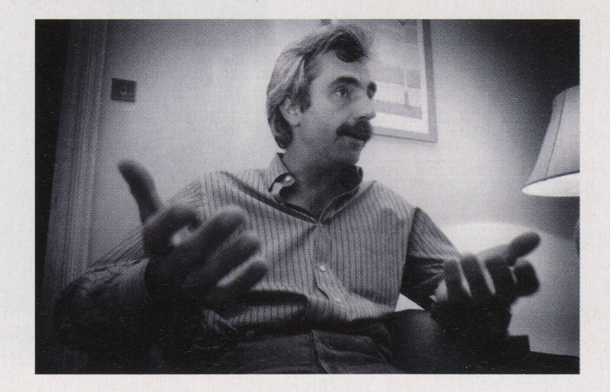
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R J Mical

R J Mical was a guiding force behind the Amiga, the Lynx and the 3DO. **Edge** greets one of the games industry's true originals



The magnificently mustachioed R J Mical has been creating computers since most of us were gawping at digital watches. Not all of his creations saw the light of day, but the ones that did became central to the home computer entertainment revolution. R J started his career at Williams Electronics in Chicago before teaming up with hardware designer Dave Needle to produce the original Amiga 1000. The pair then went on to create a state-of-the-art handheld games machine that ultimately surfaced as the Atari Lynx. Since 1990, his talents have been directed towards a single end: the 3DO. R J is vice-president and Fellow of The 3DO Company and was responsible for developing the 3DO's operating system software and Cinematic Software Tools.

Edge met R J in the pastel paradise of the St James Club in London, where he discoursed on 3DO, Atari, Zen and mad-dog Englishmen.

Edge What's the story behind the creation of the 3DO?

R J Mical My partner, Dave Needle, and I, with Dave Morse, had this company called

New Technologies that was founded to create a bunch of cool technology – some small things, a few medium-sized projects and one or two major projects. At the time we thought it would be fun to do something really powerful. The machine that was successful out there then was the Genesis and we thought we'd make something ten times better than the Genesis. We weren't really into it for the money. We were into it for the opportunity to do that stuff because it's just so cool. Fortunately for us, our success over the years was enough to keep us in business while we were working on this, the system that ended up turning into the 3DO. We did the Amiga originally and then we did the Lynx. The Amiga was a good piece of technology and so was the Lynx, but both of these machines suffered from a lack of public awareness.

Edge Do you feel that Atari let you down over the Lynx?

R J At the time it was a superior piece of technology. They had a lot of problems due to their history as a company and the relationships they have maintained and squandered with software developers and hardware suppliers. We didn't believe it had a chance of surviving when it was sold to Atari. Sadly for us, and sadly for a lot of people, it turned out to be true.

Edge So you feel some empathy with the designer of the Jaguar, then?

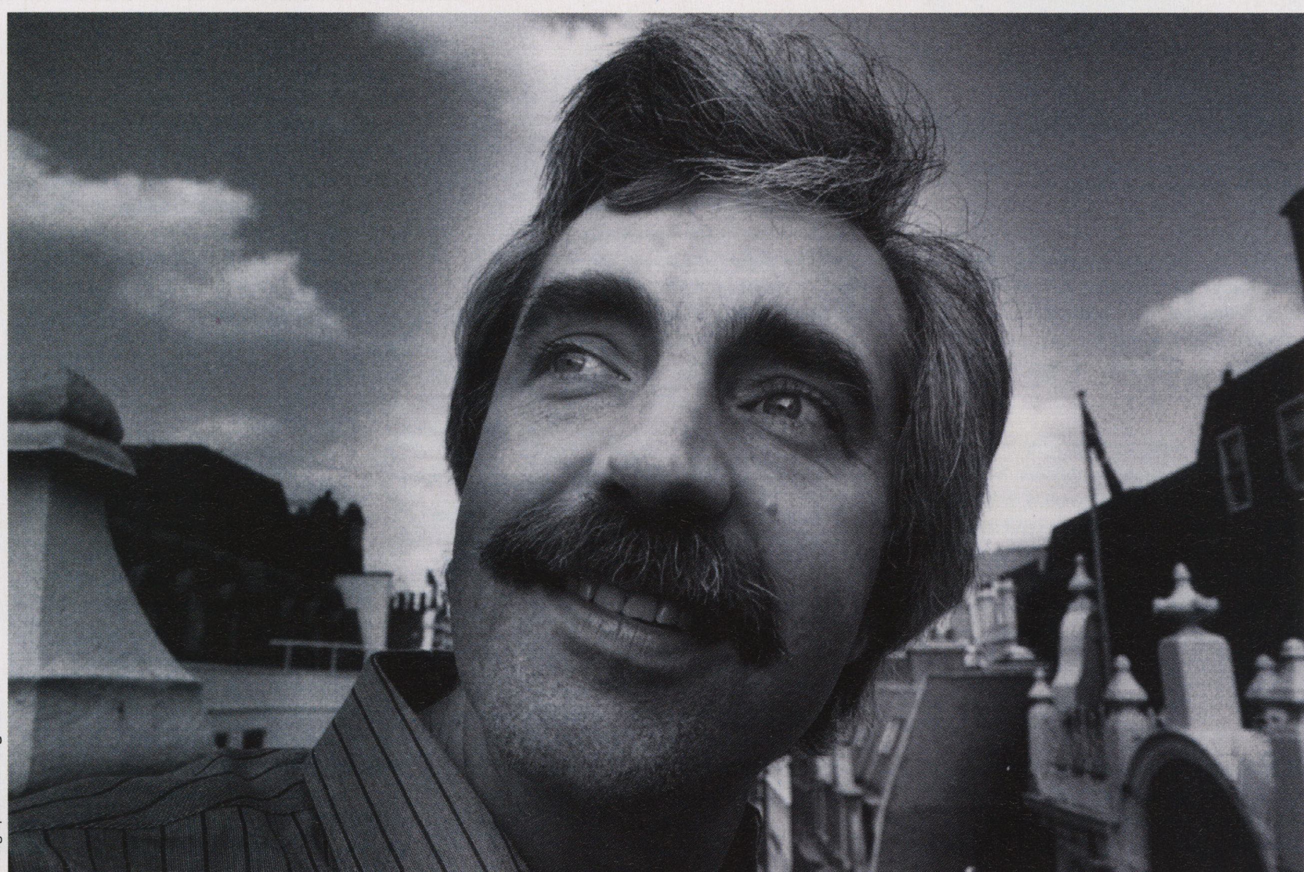
R J Well, we resisted as much as we could having the thing go to Atari and when we were unsuccessful we resigned from the company where we created it, a company called Epyx. The day after we resigned, the three of us, Dave Needle, Dave Morse and I, got together for lunch to figure out what we were going to do next and we decided on what projects we wanted to work on, including what eventually became the 3DO. Though the Amiga had only limited success [in the US], it was recognised as a real nice piece of technology that just wasn't sold well. Likewise the Lynx. So the third time we started walking around saying, 'We've got this great idea for a system', people were enthusiastic and were willing to front us the money to bring it to fruition.

'We didn't believe the Lynx had a chance of surviving when it was sold to Atari. Sadly for us, it turned out to be true'

Edge When did Trip enter the picture?

R J We were visited one day by a venture capitalist, Dean Hovey, who saw the prototypes of the 3DO we had put together and was extremely excited by it. He told us he had been with Trip the evening before and Trip [then president of EA] had been expressing great frustration at the rigmarole of having two, three dozen platforms out there to develop for and was saying he wanted to invent a new standard in the industry and a brand-new technology. Then we'd have one system that we'd all believe in and everyone would be happy. The consumers would be happy, there wouldn't be the confusion, they'd get the very best, we'd support it and push it to be the best, and we'd all win. It would be a big win all the way round. The only problem Trip had is that he didn't have the technology yet. But after a dance of NDAs we got together with Trip and by the end of that afternoon we had an understanding of the kind of company we might try and form together.

Continued next page

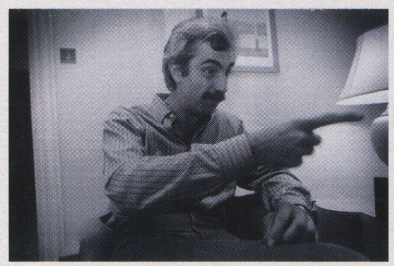


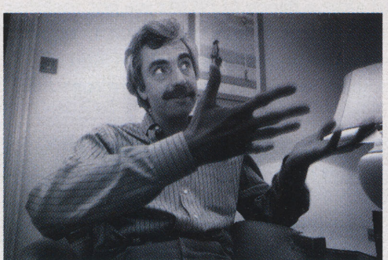
Photographs: Jude Edginton

Edge This is at the end of 1990. Was autumn 1993 always the target for the launch, or did you have problems?

R J We originally figured on a little bit earlier, but as we brought in more partners they had their own desires which had to be satisfied. Time Warner wanted it to be good at working with movies as they had an interest in the cable market. AT&T wanted it to have a powerful operating system able to handle telecommunications. So the schedule kept slipping.

Edge That must have been frustrating given that your putative competitors were also busy at work?





R J Mical professes not to be concerned about the Saturn and PlayStation

R J For the business people, yes. But the technology people were delighted because that's what we love to do most – to extract what the thing is destined to be, not what we originally set down on paper.

Edge Are there any features that you're particularly pleased with?

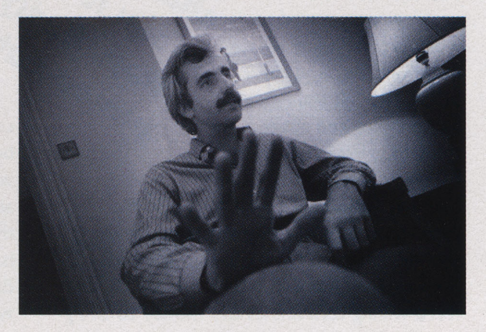
R J I'm very delighted with the overall graphics processing capabilities. We wanted to have something that would make you sit back and say, 'Woah, this is television!' We wanted to put together an engine that would push pixels around very conveniently, have high rendering rates and produce natural, real-world effects.

Edge The 3DO has been criticised for its comparatively modest polygon rendering rate. Is this a real deficiency or do you think the polygon experience is overrated?

R J I think it is an overrated thing. There are a lot of applications that you can do if you have a huge amount of polygon rendering horsepower behind you that are more difficult to do if you don't, but that's just one part of a good games system. You have to have excellent audio processing and a system that can do animated characters well. But we do have a very nice polygon engine in the 3DO and we haven't yet seen what developers will be able to do when they get really comfortable with it.

Edge Has any game released so far lived up to your ambitions for the machine?

R J *Road Rash*. Its blend of 3D horsepower and 2D character animation made for a rich experience. It's doubtful that some of these new polygon systems coming out are going to be able to do that very well.



Even with 3DO M2 is on the way, R J believes that the current machine can survive on its own

Edge How can you be so sure? Their specs look mighty impressive.

R J At the moment I'm not really concerned about them.

Edge Do you have any thoughts about why consumers, especially in the USA, have resisted 3DO's attraction?

R J I understand that it's doing so much better in the States now that the people there are no longer concerned about it. Everyone's very happy. It looks like this Christmas is going to be very good for us.

Edge Assuming that this is the case, and given that Trip Hawkins is quoted as saying, 'We don't need a next-generation product until there's much more pressure in the marketplace', we were surprised to hear about Bulldog/M2. What can you tell us about it?

R J Well, now, let's see. Bulldog... Something that bites your ankle and needs a crowbar to get it off... We are thinking about an upgrade for the existing machine that will add a bunch of extra capabilities.

Edge What, specifically, can we expect to see in this add-on?

R J Well, nothing's decided yet. I agree with Trip: there's no big pressure yet to do anything. 3DO's on top. We've got a machine now. We're selling tons of them now. We're selling incredible amounts of software per piece of hardware. These other machines, if and when they ever come out, are going to have a long startup period struggling to establish themselves, just as we did. We will have to address them at some point but we don't have any sense of urgency.

Edge You've recently announced Sanyo as a hardware licensee. Is there anyone else waiting in the wings?

R J I hope that Philips becomes one of the companies that joins the 3DO family and does a 3DO system, at least for the European market. They don't have to let the CD-i go, although that's what I would advise them to do. I'd really like to see it happen. The CD-i was an extremely good machine when it was first launched but, like the Amiga, it's many years old now and it's time for the next steps to be taken. I think that a way for Philips to continue to keep its presence in the marketplace would be to join us, and it would be to 3DO's benefit to have a company as great as Philips as one of our manufacturers.

Edge Are you ever surprised by what your machines can do? Do coders break through what you thought were the technical limits?

R J Absolutely. I was with a programmer from Elite recently and he was showing me an effect on the 3DO that was just amazing. It's an extremely complicated idea that took a long time for him to explain to me, but it was fantastic, because it was the first instance I've seen where an engineer has reached beyond our logic into the hidden logic that's there in the system waiting to be discovered – the underlying Zen.

'I hope that Philips becomes one of the companies that joins the 3DO family. I would advise them to let the CD-i go'

Edge You mentioned Elite. Do you find British programmers particularly ingenious?

R J In general I think they are. UK and Germany. If you look at the stuff on the Amiga, by far the coolest hacks of all came out of the UK and Germany. These mad-dog programmers who live, breathe, eat and drink this stuff. I would hire each one of them to join my company if I could because I want those kind of passionate, crazy, wild-haired, wild-eyed fanatics who care about doing superb things. And that's what 3DO is really all about. EDGE

AN EYE FOR AN EYE





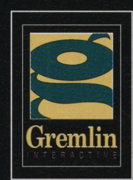


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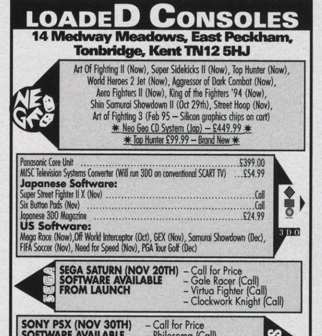
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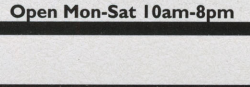
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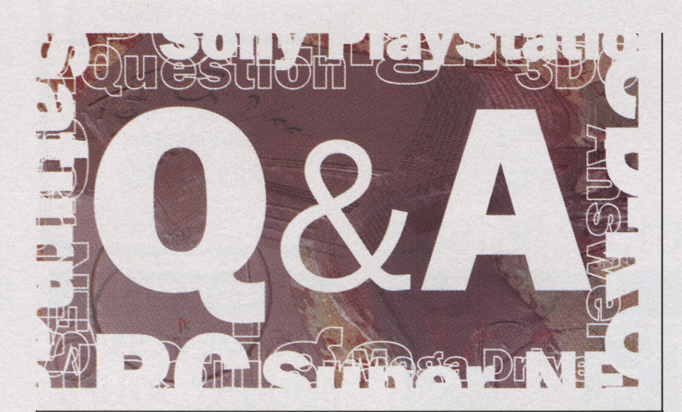
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questiontime



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Q I am an owner of a high-end PC and have a few questions.
1. Even with a high-end machine, is it true that PC games will never be as good as games on 3DO or PlayStation? Are PC owners doomed (no pun) to play games with amazing 3D engines like *Doom*'s but never to play games like *Crash 'n Burn*?
2. Can't programmers write games which use the PC like a console, ie not bothering about operating systems but going straight into games and using the hardware as if it was part of the game? I gathered this was one of the major problems.
3. What's all this about a 3DO PC card? Will it be expensive? Will the quality be as good as the 3DO proper?

Alek Hayes,
London
captain@tempest.demon.co.uk

A **1.** The texture-mapping abilities of the new consoles are far greater than that of a DX2/66 PC (although few 3DO games seem to take advantage of that power, with the notable exceptions being Crystal Dynamics' duo, *Total Eclipse* and *Crash n' Burn*). But what the PC lacks in custom hardware, it makes up with its huge development community. Companies like id, Bullfrog, and Lucas Arts have honed their skills on the PC and the resulting software quality speaks for itself.
2. Unlike consoles, the PC hardware was designed to be controlled by a separate operating system; without *MS-DOS* or a similar program like *PC-DOS* or *DR-DOS* you wouldn't be able to boot up your PC. But it's not operating systems per se that cause the problem but the archaic memory map used by *MS-DOS* and its equivalents, which leaves a 384K 'hole' in the amount of RAM available to programmers due to the memory allocated *to* buffers and hardware interfaces. To circumvent this, some games use their own mini-operating systems which work in conjunction with *MS-DOS* but address memory as a contiguous whole. IBM's *OS/2* and the next version of *Windows* will get rid of the problem altogether.
3. Creative Labs' 3DO Blaster card enables 3DO games to be played on the PC with no loss of quality. Price is still unconfirmed.



Acorn's RISC PC is based on an ARM610 CPU, a 32bit RISC chip like the PowerPC and the 3DO's central processor (see David Young's letter)



***Motor Toon GP*: why a link-up rather than a splitscreen game? (See letter from Simon Birks)**

Q In the *Virtua Fighter* prescreen in **Edge** 11, we learned that AM2 are hard pressed to faithfully reproduce the coin-op's polygon count on the Saturn. However, it appears that the texture-mapping chip can be employed to compensate for lack of detail. Now, this is either painfully obvious or practically impossible, but instead of creating the graphics in solid polygon form, why can't Sega create each character as a wireframe mesh and then simply use the texture-mapping chip to assign a flat-shaded colour to each facet? The use of wireframe graphics would drastically speed up the frame rate and make more use of the custom texture-mapping chip.

Gawain Davies,
Leicestershire

A Texture mapping is impossible with wireframe geometry. Textures – or flat shades – can only be applied if there is a polygon surface to map them to. Trying to texture map the gaps between wireframes would be like trying to paint a window pane when there is no glass in the frame.

Q I use a 486 PC but I am seriously considering moving to a RISC-based machine to learn 3D programming. The consoles with the best chances of survival are RISC-based and I'm aiming for a career in games development.
1. Is the ARM 610 in the new Acorn RISC PC the same as the ARM60 in the 3DO? In **Edge** 9 you said the Acorn RISC PC 'incorporates non-standard ARM chips'. Please explain.
2. What similarities and differences does the Acorn ARM610 have with the RISC chips found in Apple's new Power Macintoshes and, eventually, IBM machines?
3. Would the ability to program on, say, an Acorn RISC PC be a portable skill which could be transferred to the other RISC chips (PowerPC, R3000A and the Hitachi SH1 and SH2)?
4. And finally, why isn't Acorn advertising its RISC PC? It might not be able to take on the big guns (Apple and IBM) but perhaps showing an energetic interest in its own product would give it a chance.

David Young,
Manchester

A **1.** The ARM60 and ARM610 are different processors. The RISC PC's ARM610 has the same 32bit RISC processor core as the ARM60 but includes additional logic – 4K of cache memory and a memory management unit.

By 'non-standard', **Edge** meant that although Acorn's machine is being marketed as a PC, its CPU is not compatible with the '86' series of chips used in conventional PCs. The RISC PC also contains a range of custom hardware, including a powerful video graphics chip (VIDC20) and a system chip (IOMD), both of which are designed by ARM.
2. The ARM610 chip is a 32bit RISC chip like the PowerPC, but it's smaller, more cost effective and consumes less power. It's also easier to integrate extra logic circuits into it.
3. Yes. Generally, programmers write code in a high-level language like *C*, which is not processor specific. A compiler is then used to convert the code into the basic binary information (machine code) needed to drive

the particular processor at which the program is targeted.
4. Look in the Times Educational Supplement and you'll see adverts for the RISC PC. Like all previous Acorn computers, the RISC PC is being aimed at the educational sector, although Acorn does have a core following of home enthusiasts as well as users in the professional desktop publishing field.

Q **1.** Is Sony going to emulate The 3DO Company and its open licence policy, or will it adopt (as I think it will) the usual greedy, fascistic approach to developers as Nintendo, Sega and other Japanese companies do?
2. Will the PlayStation have a mouse for graphic adventures and strategy games? I don't think the PlayStation joypad looks up to the job – it looks impossible to perform diagonal moves on it.
3. Now that CD-ROM has taken off, when are we going to do away with all this synthesised rubbish and start having the London Symphony Orchestra on game soundtracks? I don't mean using existing recordings (like *Rebel Assault*, for example) but original game scores. Imagine them on games like *Bioforge* and *The Dig*…

James McLean, Glasgow

A **1.** Like most Japanese companies, Sony are pretty uncompromising, but, to their credit, they are making software development for the PlayStation more financially attractive than it is for either Sega or Nintendo. Sony's Japanese licensing documents inform developers that they will be charged a production fee of ¥900 (£5.80) for each CD, or 10% of the retail price (whichever is the greater). There are mastering and licensing fees on top of that, but the total is still less than the cost of buying cartridge ROMs from either Sega or Nintendo. In contrast to 'open' development environments as enjoyed by the Amiga and PC, the Japanese console market will remain tough and restrictive.
2. A mouse is a certainty for the PlayStation, but don't rule out the joypad – as previously reported in **Edge**, Sony has spent a great deal of time on the joypad design. Although the four directional keys on the pad look as if they're completely separate from each other, they are actually connected underneath the casing, making diagonal movement just as easy as it is on the more conventional circular pads found on the SNES and Mega Drive.
3. Some American CD-ROM publishers are spending a lot of money on producing fully orchestrated soundtracks (*Wing Commander III* is one example), but there's some debate about the use of CD digital audio in games. The main drawback for consoles is that CD music slows down the speed at which game data and graphics can be loaded in. Using chip music eases the problem because it allows a full flow of game data (300K/sec on most CD machines), but few game musicians (see feature this issue, page 58) are keen to actually program music these days. The quality of sound hardware inside the PlayStation and Saturn is exceptionally high, and it would be a shame for developers not to take advantage of it.



Although a PlayStation mouse is on the cards, Sony has concentrated its resources on the joypad design (see James McLean's letter)



***Total Eclipse* is one of the few games to make full use of the 3DO's advanced texture-mapping abilities (see letter from Alek Hayes)**

Q Ever since the PlayStation underwent the transformation from myth to reality, it has been hard not to notice the attention is has attracted from developers and journalists alike. However, what has drawn the PlayStation to my attention is its potential for link-up games. In **Edge** 13 you mentioned that a link-up facility was possible for *Motor Toon GP* in which two PlayStations can be linked together for play on two TV sets.
1. Does this mean that splitscreen multiplayer games won't be possible on the PlayStation, and if not, why not?
2. Similarly, can you only play link-up games on the Saturn by lugging a machine round to your friend's house or vice versa?
3. Lastly, if the PlayStation takes off in a big way, can you foresee a modem being made available for multiplayer games? Playing *Cyber Sled* over the wire would be something else.

Simon Birks, Cannock

A **1.** Splitscreen games will be possible, but the link-up potential is still a boon – with two TVs you could play fourplayer games (two players per screen).
2. Yes, but if the result is a superb multiplayer version of *Daytona*, it's worth the effort.
3. Sony is working on a modem for the PlayStation, to be connected to the external port at the back of the machine. It's possible that multiplayer games like *Cyber Sled* will be produced for it, although phone lines may slow things down.

Q How does the Jaguar compare with the 32X. Both are in a similar price range, but with the Saturn on the horizon, I'm unsure about the future of the 32X.

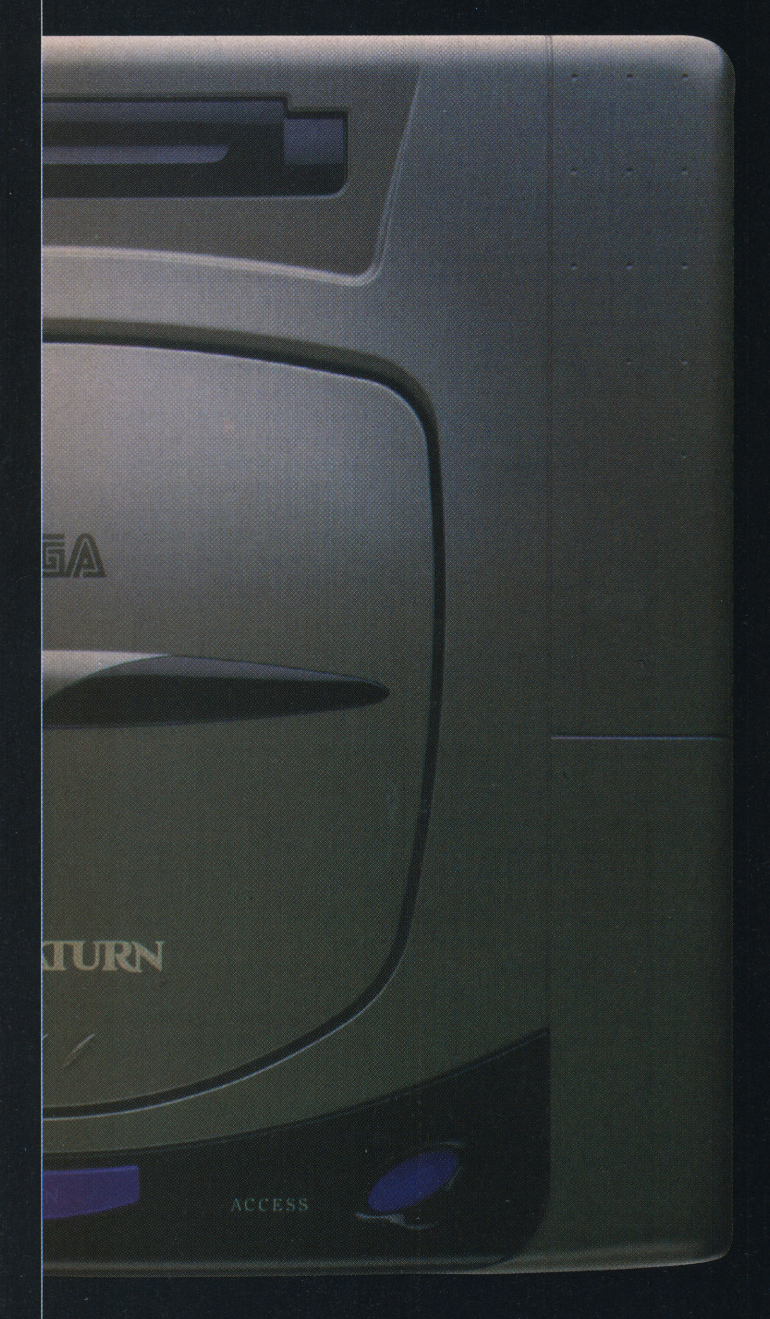
Brian Wood, Hereford

A In CPU terms, the 32X walks all over the Jaguar (although the Jag's graphics processor has great potential). If the 32X can attract a range of decent games, it's probably a better bet than the Jaguar, but whether it will survive the arrival of the Saturn remains to be seen.

Q and A

You can rely on Edge to cut through the technobabble and give you straight answers. Write to: Q&A, Edge, 30 Monmouth Street, Bath, Avon BA1 2BW, You can fax us on 0225 338236, or e-mail us via future@cix.compulink.co.uk, with the first line reading 'ATTN: Jason Brookes' (including spaces). Edge can't answer questions personally, either by phone or post.

Next month





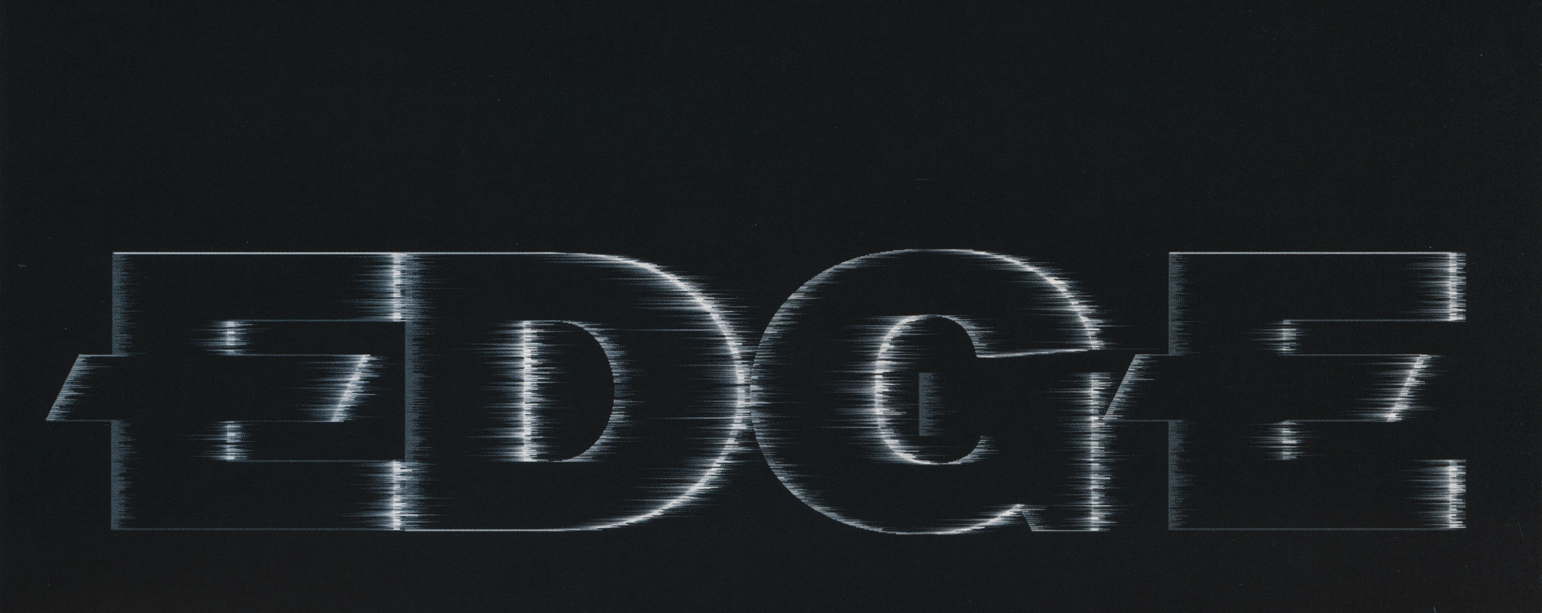
Welcome to the next level

In issue 16, Edge examines the 32bit SegaSaturn. With a Japanese launch date now scheduled for late November, the machine is the first piece of artillery to be rolled out for the imprending next-generation console war. Edge has a detailed analysis of the hardware and a complete rundown of the software line-up, and asks the videogames industry: will Saturn run rings around the competition?

EDGE 16

Thursday 24 November

continued Edge 16


EDGE

News

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Features

Videogame music

Retrogaming

PlayStation

Tales Of The Combat Gods

Motor Toon Grand Prix

***Ridge Racer* update**

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***Magic Carpet* (PC)**

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